South County Traffic Model Update

2006 Annual Report and Fifth Year Update

Final Report

Prepared For
San Luis Obispo County

Prepared By:

omni · means
ENGINEERS · PLANNERS

SOUTH COUNTY TRAFFIC MODEL UPDATE
2006 ANNUAL REPORT AND FIFTH YEAR UPDATE

FINAL REPORT

Prepared For
San Luis Obispo County

Prepared By

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EXECUTIVE SUMMARY

This South County Traffic Model Update - 2005, initiated by the County of San Luis Obispo and performed by OMNI-MEANS, is used to determine the preferred future traffic network improvements in the South County Nipomo area and update the existing traffic impact fee to pay for these needed improvements. The process began by assessing the existing traffic network in the South County Nipomo planning area. The existing traffic generation of the various land uses contained within the area was estimated based on County assessor parcel data. The future traffic generation of the planned land uses in the area at full build-out of the General Plan was projected and then assigned onto the existing traffic model street network. Locations where insufficient capacity was projected, thereby resulting in increases in traffic congestion, were identified within the traffic model. These locations were then recommended for improvement, with various alternatives presented by the County and analyzed by OMNI-MEANS.

Preferred alternatives were finalized by the County and the cost of improvements was estimated by OMNI-MEANS on a per project basis. The total cost of the improvements was then spread over the sub-areas in which the improvements are located, with the cost spread over only new development-based new trips generated within each sub-area. Table ES-1 and ES-2 show the projected Levels-of-Service for various roadway facilities with existing roadway and intersection configurations. A projected LOS is subsequently presented for each facility based on the completed construction of the recommended improvement also presented in the table.

Table ES-3 shows the projected total cost of improvements for each sub-area and the projected increase in trips resulting from development. As indicated, nearly $97,000,000 in transportation improvements has been identified to mitigate projected traffic conditions under build-out of the Nipomo Community Land Use Plan. Less about $15,000,000 collected to date, the updated fee will need to fund nearly $82,000,000 in improvement costs.

Table ES-4 shows updated recommended fees and their proposed change from current fees to cover these increased costs. These recommended fees have been identified for each sub-area and for residential, non-residential commercial/service, and non-residential non-commercial/service land uses.

TABLE ES-1
BUILD-OUT CONDITIONS: ROADWAY SEGMENT AVERAGE DAILY TRAFFIC LEVELS-OF-SERVICE

Roadway Segment	Facility Type	2025 Forecasted ADT	2025 PM PK HR (10% ADT)[1]	2025 PM PK HR LOS	Recommended Improvements	Expected 2025 LOS
Tefft Street Corridor						
Tefft Street (north of Las Flores Drive)	Two-lane Collector	1,668	170	A		
Tefft Street (south of Orchard Avenue)	Three-lane Arterial (Two lane w\ center turn lane)	10,437	1,040	D	-	-
Tefft Street (west of Pomeroy Road)	Five-Lane Divided Arterial (Four lanes w\ center turn lane)	20,384	2,040	C	-	-
Tefft Street (west of Mary Avenue)	Five-Lane Divided Arterial	31,645	3,160	D	-	-
Tefft Street (west of Frontage Rd)	Five-Lane Divided Arterial	**36,291**	**3,630**	**E**	Intersection improvements	C
Tefft Street (east of Frontage Rd)	Five-Lane Divided Arterial	33,583	3,360	D	-	-
Tefft Street (east of Oakglen Avenue)	Three-lane Arterial	13,201	1,320	D	-	-
Tefft Street (west of Thompson Avenue)	Three-lane Arterial	10,070	1,010	C	-	-
Los Berros Rd Corridor						
Los Berros Rd (east of Valley Rd)	Two-lane Collector	**6,474**	**650**	**D**	Install shoulders and turn pockets	B
Los Berros Rd (east of Stanton Rd)	Two-lane Collector	**8,741**	**870**	**D**	Install shoulders and turn pockets	B
Los Berros Rd (west of US 101)	Two-lane Arterial	**8,695**	**870**	**D**	Install shoulders and turn pockets	B
Thompson Street Corridor						
Thompson Street (south of US 101)	Two-lane Arterial	5,298	530	C	-	-
Thompson Street (north of Tefft Street)	Two-lane Arterial	7,884	790	C	-	-
Thompson Street (north of SR 166)	Two-lane Collector	4,035	400	C	-	-
Pomeroy Rd Corridor						
Pomeroy Rd (south of Los Berros Rd)	Two-Lane Collector	2,711	270	B	-	-
Pomeroy Rd (north of Willow Rd)	Two-Lane Collector	5,291	530	C	-	-
Pomeroy Rd (north of Tefft Street)	Two-lane Arterial	7,516	750	D	-	-

Note: 1. 10% peak daily factor derived from average peak hour volume-daily volume ratio (2004 and, 2005 counts).
2. Highway Capacity Manual 2000 methodology for 2-lane highways, arterial capacities adjusted based on observed characteristics of each roadway

TABLE ES-1 (CONT'D)
BUILD-OUT CONDITIONS: ROADWAY SEGMENT AVERAGE DAILY TRAFFIC LEVELS-OF-SERVICE

Roadway Segment	Facility Type	2025 Forecasted ADT	2025 PM PK HR (10% ADT)1	2025 PM PK HR LOS	Recommended Improvements	Expected 2025 LOS
El Campo Rd Corridor						
El Campo Rd (south of Halcyon Rd)	Two-Lane Collector	**5,359**	**540**	**D**	Install shoulders	C
El Campo Rd (north of Halcyon Rd)	Two-Lane Collector	3,088	310	C	-	-
El Campo Rd (south of US 101)	Two-Lane Collector	1,815	180	B	-	-
Halcyon Rd Corridor						
Halcyon Rd (north of Cienaga Rd/Hwy 1)	Two-lane Collector	12,385	1,240	C	-	-
Halcyon Rd (south of Cienaga Rd)	Two-lane Collector	**13,776**	**1,380**	**F**	Realign horizontal curves and construc	C
Halcyon Rd (west of El Campo Rd)	Two-lane Collector	4,707	470	C	-	-
Halcyon Rd (east of Aloma Way)	Two-lane Arterial	587	60	A	-	-
Orchard Avenue Corridor						
Orchard Avenue (south of Tefft Street)	Two-lane Collector	9,290	930	C	-	-
Orchard Avenue (south of Division Street)	(Two lanes w\ center	6,194	620	C	-	-
Orchard Avenue (south of Story Street)	Three-lane Collector	5,341	530	C	-	-
Orchard Avenue (south of Southland Street)	Two-lane Collector	5,318	530	C	-	-
Hutton Road (north of SR 166)	Two-lane Collector	**5,234**	**520**	**D**	Install shoulders	C
Other facilties						
Division Street (west of Orchard Avenue)	Two-lane Arterial	6,247	620	C	-	-
Frontage Rd (south of Tefft Street)	Two-lane Collector	**8,689**	870	D	-	-
Frontage Rd (north of Sandydale Drive)	Two-lane Collector	7,872	790	B	-	-
Hetrick Avenue (south of Summit Station Rd)	Two-lane Collector	514	50	A	-	-
Mary Avenue (north of Tefft Street)	Two-lane Arterial	7,823	780	C	-	-
Mary Avenue (south of Tefft Street)	Two-lane Arterial	8,669	820	C	-	-
Mesa Rd (west of Tefft Street)	Two-lane Collector	5,928	590	C	-	-
Summit Station Rd (south of Los Berros Rd)	Two-lane Collector	2,430	240	B	-	-
Highway 1 (west of Willow Road)	Two-lane Arterial	**13,800**	**1,380**	**E**	Add left-turn lane and shoulders	C
Willow Rd (east of Highway 1)	Two-lane Arterial	4,932	490	C	-	-
Willow Rd (west of Pomeroy Rd)	Two-lane Arterial	9,590	960	D	-	-
Willow Rd (west of US 101)	Two-lane Arterial	11,236	1,120	C		
Willow Rd (east of US 101)	Two-lane Arterial	4,447	440	C		

Note: 1. 10% peak daily factor derived from average peak hour volume-daily volume ratio (2004 and 2005 counts).
2. Highway Capacity Manual 2000 methodology for 2-lane highways, arterial capacities adjusted based on observed characteristics of each roadway

As shown in Table ES-1, segments of Tefft Street, Los Berros Road, El Campo Road, Halcyon Road, Orchard Avenue/Hutton Road, and Willow Road are projected to operate at deficient Levels-of-Service under build-out conditions without additional roadway improvements.

TABLE ES-2
BUILD-OUT CONDITIONS: PEAK HOUR INTERSECTION LEVELS-OF-SERVICE

#	Intersection	Control Type	AM Peak Hour Delay	AM Peak Hour LOS	AM Peak Hour Warrant Met?	PM Peak Hour Delay	PM Peak Hour LOS	PM Peak Hour Warrant Met?	Recommended Improvements	Expected 2025 LOS
1	**Highway 1/Halcyon Road (west)**	**AWSC**	**OVR**	**F**	**Yes**	**OVR**	**F**	**Yes**	Realign intersection and signalize	C
2	**Highway 1/Halcyon Road (east)**	**AWSC**	**OVR**	**F**	**Yes**	**OVR**	**F**	**Yes**	Realign intersection and signalize	C
3	**Highway 1/Valley Road**	**TWSC**	**OVR**	**F**	**Yes**	**OVR**	**F**	**Yes**	Realign horizontal curves and signalize	B
4	Mesa View Drive/Halcyon Road	Signal	29.7	C	-	26.1	C	-	-	-
5	**US 101 NB Ramps/Thompson Avenue**	**TWSC**	**OVR**	**F**	**Yes**	**80.9**	**F**	**Yes**	Signalize intersection	B
6	**US 101 SB Ramps/Los Berros Road**	**TWSC**	**59.8**	**F**	**Yes**	**OVR**	**F**	**Yes**	Signalize intersection	B
7	**Willow Road/Pomeroy Road**	**TWSC**	**OVR**	**F**	**-**	**57.0**	**F**	**-**	Construct Willow Rd extension to new interchange (westbound approach) and signalize intersection	C
8	Tefft Street/Thompson Avenue	Signal	32.9	C	-	30.3	C	-	-	-
9	**Tefft Street/Oakglen Avenue**	**Signal**	**70.3**	**E**	**-**	**OVR**	**F**	**-**	Intersection widening	C
10	**US 101 NB Ramps/Tefft Street**	**Signal**	**OVR**	**F**	**-**	**OVR**	**F**	**-**	Widen to dual eastbound left-turn lanes	C
12	**US 101 SB Off-Ramp/South Frontage Road/Tefft Street**[1]	**Signal**	**OVR**	**F**	**-**	**OVR**	**F**	**-**	Move SB on-ramp and construct Mary St. extension	C
13	**Juniper Street/Mary Avenue**	**TWSC**	**OVR**	**F**	**Yes**	**OVR**	**F**	**Yes**	Widen intersection and signalize	C
14	**Tefft Street/Mary Avenue**	**Signal**	32.8	C	-	**OVR**	**F**	**-**	*Assumes Mary Street extension,* signalize and widen	D
15	Pomeroy Road/Juniper Street	TWSC	20.2	B	No	23.2	C	No	-	-
16	**Pomeroy Road/Sandydale Drive**	**TWSC**	**OVR**	**F**	**Yes**	**95.5**	**F**	**Yes**	Improve parallel facilities (Hetrick Ave.)	C
17	Tefft Street/Pomeroy Road	Signal	27.3	C	-	28.1	C	-	-	-
18	Tefft Street/Orchard Avenue	Signal	34.1	C	-	35.0	D	-	-	-
19	Orchard Avenue/Division Street	Signal	30.0	C	-	28.2	C	-	-	-
20	**US 166/Hutton Road**	**TWSC**	**25.5**	**D**	No	**53.5**	**F**	**Yes**	Construct roundabout	B
21	**US 101 SB Ramps/US 166**	**TWSC**	**60.2**	**F**	**Yes**	**OVR**	**F**	**Yes**	Construct roundabout	B
22	**US 101 NB Ramps/US 166**	**TWSC**	**30.0**	**D**	**Yes**	**OVR**	**F**	**Yes**	Construct roundabout	B
23	US 166/South Thompson Avenue	TWSC	11.3	B	No	12.5	B	No	-	-

Note:

TWSC – Two-Way-Stop-Control AWSC – All-Way-Stop-Control OVR – Over Capacity

1. *Intersection 11 (US 101 SB on-ramp/Tefft Street) forms the fifth leg of Intersection 12. The improved intersection operations with a realigned US 101 SB on-ramp at Hill Street is analyzed in the subsequent Tefft Street corridor Synchro analysis.*

As shown in Table ES-2, intersections along Highway 1, at the US 101/Los Berros Road/Thompson Avenue interchange, along Tefft Street, at Juniper Street/Mary Avenue, Pomeroy Road/Sandydale Drive, and at the US 101/SR 166/Hutton Road interchange are projected to operate at deficient Level-of-Service with existing geometrics and without additional intersection improvements.

TABLE ES-3
SOUTH COUNTY PROJECT COSTS AND AREA TRIP SHARE

	Total Required Funding From Impact Fees	Funds Collected (as of March 31, 2005)	Net Required Funding From Impact Fees
Area 1	$66,241,402	$9,991,310	$56,250,092
Area 2	$32,855,250	$4,932,570	$27,922,680
	$99,096,652	$14,923,880	$84,172,772
	Additional Peak Hour Trips (PHT)		
	Residential	**Commercial/Retail**	**Non-Residential Other**
Area 1	2,815	5,933	2,164
Area 2	1,792	1,117	1,727

Table ES-3 presents the total cost of improvements for roadway facilities in Area 1 and 2 of the South County Nipomo planning area. Table ES-4 shows the fees using the Area l/Area 2 split, assigned across the number of additional peak hour trips for each land use.

TABLE ES-4
RECOMMENDED FEE SCHEDULE

Land Use	Current Fee	Proposed Fee	Fee Increase	% Change	Woodlands Contribution
Area 1					75%
Residential	$8,557/pht	$10,337/pht	$1,780/pht	21%	$7,753/pht
Retail	$1,325/pht	$2,932/pht	$1,607/pht	121%	$2,199/pht
Other	$4,117/pht	$4,510/pht	$393/pht	10%	$3,383/pht
Area 2					25%
Residential	$8,391/pht	$8,954/pht	$563/pht	7%	$2,239/pht
Retail	$1,818/pht	$3,147/pht	$1,329/pht	73%	$787/pht
Other	$6,057/pht	$4,842/pht	-$1,216/pht	-20%	$1,210/pht

Chapter 1

INTRODUCTION

In the summer of 2004, San Luis Obispo County commissioned OMNI-MEANS to provide the South County Traffic Model Update. The model update involves the creation of a new computerized South County Nipomo traffic model that would reasonably simulate current traffic flow patterns and also forecast future travel demands and traffic flow patterns within and through the South County Planning Area. The development of the new "existing conditions" traffic model, calibrated to 2004-05 (base year) conditions, will form the basis from which the "future conditions model" will be developed in order to test alternative land use and/or circulation alternatives that will help assess the need, nature and timing of future circulation improvements needed within the South County Nipomo region. The new South County Nipomo traffic model will also be utilized as a planning analysis tool on a variety of traffic impact and circulation studies to assess land development proposals within the County as well as update the County's Capital Improvements Program (CIP) and Road Improvement Fee (RIP).

This Final Report is technical documentation in support of the South County Nipomo travel forecasts, resulting CIP and subsequent RIP update. This report is a compilation of three working papers, with edits and revisions based on County input. Working Paper #3 presented the recommended traffic network improvements for the South County area and associated cost estimates of the improvements. Working Paper #2 documented OMNI-MEANS' discussion on the technical components of the traffic model development process and the future traffic model forecasts. Working Paper #1 documented the compilation and understanding of available background data and information pertinent to the County's existing and future circulation system.

Chapter 2

BACKGROUND CONDITIONS

In order to initiate development of the South County Nipomo Traffic Model, OMNI-MEANS first needed to obtain a comprehensive understanding of the current transportation system and land development conditions as well as other background information pertaining to existing and future land development and travel within and through the Community. To this end, OMNI-MEANS collected available transportation and land use information that would be useful in obtaining an understanding of existing or "baseline" travel patterns within and through the South County Nipomo region.

Available sources of transportation and land use information pertinent to the San Luis Obispo County that were obtained and reviewed included the following:

- South County Nipomo General Plan Circulation Element.
- GIS database (in *ArcGIS* format) from the County that contained Assessor's Parcel mapping, General Plan land use designations, current zoning, overlay designations, land use symbols, planning area limit line information, etc.
- Assessor Parcel Land use database (in digital format) showing current land development for parcels within the South County Nipomo planning area.
- Recent traffic count data obtained from Caltrans data publications, as well as new traffic counts conducted by OMNI-MEANS in August 2004 and October 2005.
- Field (windshield) survey of roadway, land development and travel conditions, and photographs of County street system.
- Most recent aerial photographs of the South County Nipomo planning area.
- US Census Bureau, Census 2000 Data (in GIS format) for San Luis Obispo County and within the South County Nipomo planning area.
- Miscellaneous traffic circulation studies and traffic impact studies recently completed for the County.

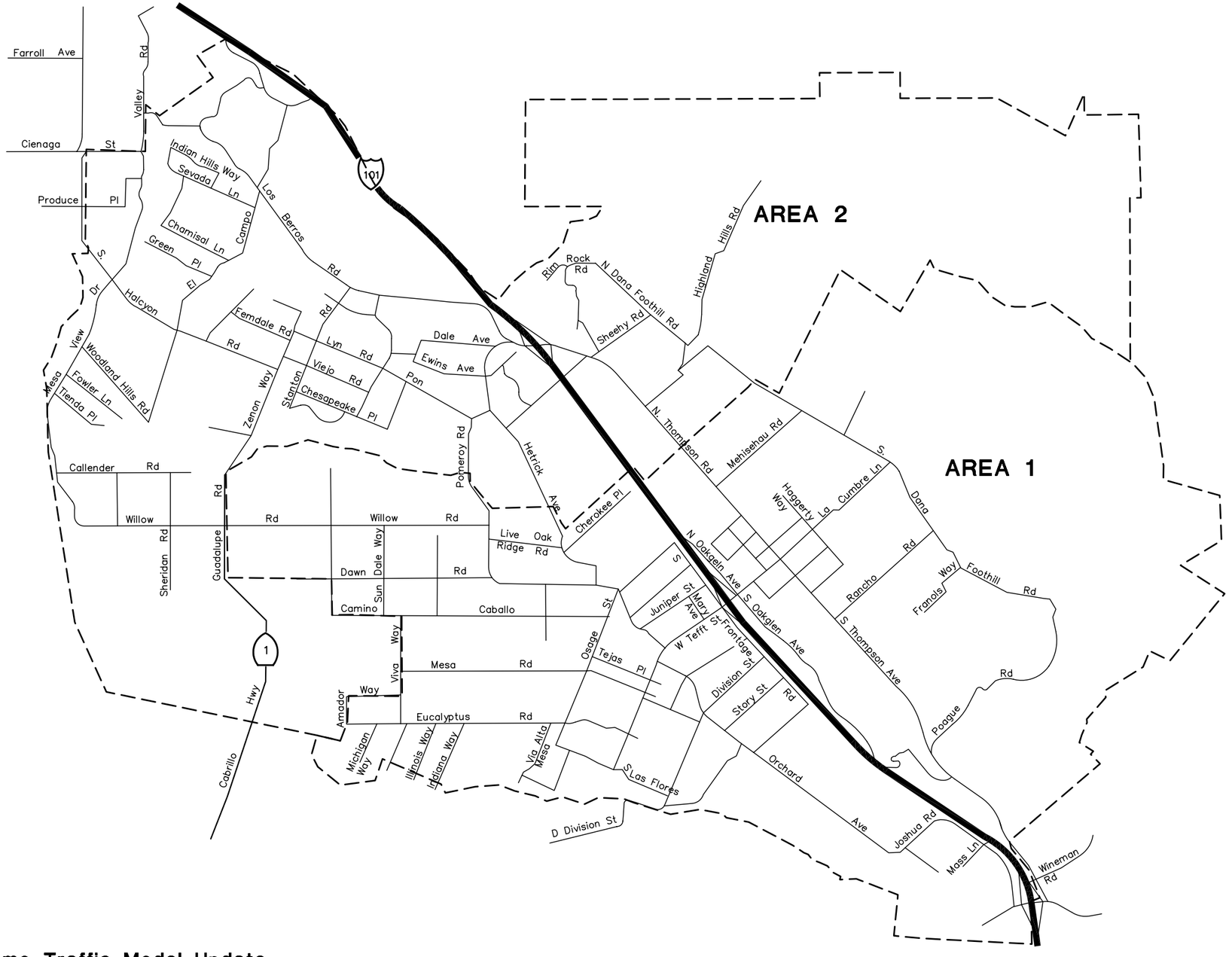
EXISTING TRANSPORTATION SYSTEM

The South County Nipomo planning area is an area located in the southern portion of San Luis Obispo County, California, extending south of the "Five Cities" area to the county's southern border with Santa Barbara County. The current population estimate for the South County area as of the end of 2004 is approximately 22,000 people. The San Luis Obispo County and Santa Barbara County border is defined by the Santa Maria River. Immediately across the county border is the City of Santa Maria.

Figure 1 illustrates the South County Nipomo Planning area.

US 101 is the primary State highway providing regional access, connecting the South County with other parts of the County and the State. ***State Route 1***, also known as the Cabrillo Highway, provides more localized access to/from the western border of the planning area, which extends from the City of Arroyo Grande into the Community of Guadalupe.

The following section describes the roadways that provide primary circulation within the South County Nipomo Planning Area.



South County Nipomo Traffic Model Update

Figure 1

South County Nipomo Planning Area

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US 101 is a major north-south highway facility that traverses along coastal California. US 101 serves as the principal inter-regional auto and truck travel route that connects San Luis Obispo County (and other portions of the Central Coast) with the San Francisco Bay Area to the north and the Los Angeles urban basin to the south. Within San Luis Obispo County, US 101 provides major connection between and through several cities. Through the South County Nipomo area of San Luis Obispo County, US 101 represents a major recreational as well as commuter travel route. Sections of US 101 within the South County Nipomo area alternate between a general four-lane divided freeway cross-section and an at-grade access four-lane divided highway cross-section, with 65 mph posted speed limits throughout. Within the South County Nipomo planning area, US 101 forms full-access interchanges with Los Berros Road/North Thompson Road, Tefft Street, and Cuyama Lane/SR 166.

State Route 1 (SR 1) is a state highway route that runs predominantly in a north-south direction. Within the South County area, SR 1 connects the City of Arroyo Grande with the Community of Guadalupe. SR 1 has a general two-lane highway type cross-section through most segments.

State Route 166 (SR 166) is a state highway route that runs predominantly in an east-west direction. SR 166 extends easterly across San Luis Obispo County into Kern County and connects to Interstate 5 (I-5) and State Highway 99 (SR 99). SR 166 has a general two-lane highway type cross-section through most segments and represents an interregional commuter travel route between the Central Valley and the Pacific coast.

Tefft Street is a major east-west arterial through and within the Community of Nipomo and has a general two and four-lane arterial cross-section through the community. Tefft Street forms a full access interchange with US 101 and serves as the primary access route for the Community of Nipomo to the freeway.

Pomeroy Road serves as an arterial connection in the southeast-northwest direction between the Nipomo urban areas and the residential and recreational areas on the Nipomo Mesa and has a typical two-lane roadway cross-section. The segment of Pomeroy Road between Willow Road and Los Berros Road is non-standard due to severe horizontal and vertical curves and narrow should widths; the intersection of Pomeroy and Augusta Road is also non-standard due to severe horizontal and vertical curves.

Orchard Avenue/Joshua Street/Hutton Road form a major north-south arterial connecting the Nipomo urban area west of US 101 with the SR 166 interchange. The road has a general two-lane cross-section.

Los Berros Road is a two-lane north-south arterial that travels through Los Berros Valley. With the closure of the Halcyon grade to truck traffic, Los Berros Road has become the primary truck route along the Nipomo Mesa.

Halcyon Road is a two-lane north-south arterial that connects the Nipomo Mesa with US 101, the City of Arroyo Grande and the Five Cities area. At its crossing with SR 1, Halcyon Road is constrained by a channel crossing, resulting in an offset intersection. A significant grade up to the Mesa on Halcyon Road south of SR 1 required the need on this segment of roadway to prohibit truck traffic.

El Campo Road is a two-lane arterial that extends southerly from an at-grade intersection with US 101 to Los Berros Road, Halcyon Road, and Woodland Hills Road. El Campo Road primarily serves residential traffic in the Nipomo Mesa area.

Juniper Street is a two-lane collector located in a residential area within Nipomo. With future area development, this roadway is projected to provide parallel access to the north of Tefft Street.

Division Street is a general northeast-southwest collector and has a typical two-lane roadway cross-section. Extending southwesterly from the Community of Nipomo, Division Street serves as the southwest gateway

to/from US 101 and the Oceano Dune State Vehicular Recreation Area. The roadway currently serves local residential, truck traffic, and agriculture traffic.

Thompson Avenue is a north-south arterial and collector that extends along the eastern border of the Community of Nipomo and has a general two-lane cross-section. In conjunction with Tefft Street, Thompson Avenue serves as the major traffic route for neighborhoods east of US 101 within the Community of Nipomo. Thompson Road also functions as the east frontage road to US 101.

South Frontage Road runs along the west side of US 101 from Tefft Street to Southland Street. *South Frontage Road* serves both residential and local commercial traffic.

Willow Road, Oso Flaco Lake Road, Eucalyptus Road, Mesa Road, and ***Camino Caballo*** are other important roadways serving the South County area that have general two-lane cross-sections.

EXISTING TRAFFIC COUNTS

Roadway Segments

For purposes of understanding existing traffic conditions as well as for developing basic inputs to the South County Nipomo traffic model, existing average daily traffic (ADT) counts were desired at critical locations within the County's planning area, where recent traffic counts may not have been conducted/available.
New weekday daily traffic counts (recorded at 15-minute intervals over a continuous 24-hour period) were conducted on October 4, 2004 (Tuesday) and October 6, 2005 (Thursday) by OMNI-MEANS, at the following roadway segments:

- Camino Caballo – west of Osage Street
- Division Street – west of Orchard Avenue
- El Campo Road – north of Halcyon Road
- El Campo Road – south of Halcyon Road
- El Campo Road – south of US 101 (at grade intersection)
- Eucalyptus Road – west of Osage Street
- Halcyon Road – north of Cienaga Road/Highway 1
- Halcyon Road – south of Cienaga Road
- Halcyon Road – west of El Campo
- Highway 1 – south of Willow Road
- Hetrick Avenue – south of Summit Station Road
- Highway 1 – west of Halcyon Road (west)
- Highway 1 – south of Halcyon Road
- Hutton Road – north of Cuyama Lane
- Los Berros Road – east of Valley Road
- Los Berros Road – east of Stanton Road
- Los Berros Road – west of US 101
- Mary Avenue – north of Tefft Street
- Mesa Road – west of Tefft Street
- Mesa Road – west of Osage Street
- Orchard Street – south of Tefft Street
- Orchard Street – south of Southland Street
- Pomeroy Road – south of Los Berros Road
- Pomeroy Road – north of Willow Road
- Pomeroy Road – north of Tefft Street

- South Frontage Road – south of Tefft Street
- Summit Station Road – south of Los Berros Road
- Tefft Street – east of Las Flores Drive
- Tefft Street – west of Tejas Place
- Tefft Street – west of Mary Avenue
- Tefft Street – east of Oakglen Avenue
- Tefft Street – west of Thompson Avenue
- Thompson Avenue – south of US 101
- Thompson Avenue – north of Tefft Street
- Thompson Avenue – north of SR 166
- Valley Road – north of Los Berros Road
- Valley Road – south of Los Berros Road
- Willow Road – east of Highway 1
- Willow Road – west of Pomeroy Road

The daily traffic counts from the above locations were supplemented with other daily traffic counts on State facilities as obtained from Caltrans data publication *2004 Traffic Volumes on California State Highways* (obtained from Caltrans' website).

Figure 2 illustrates the existing Annualized Average Daily Traffic (AADT) volumes at roadway segment locations where recent traffic counts were conducted/available.

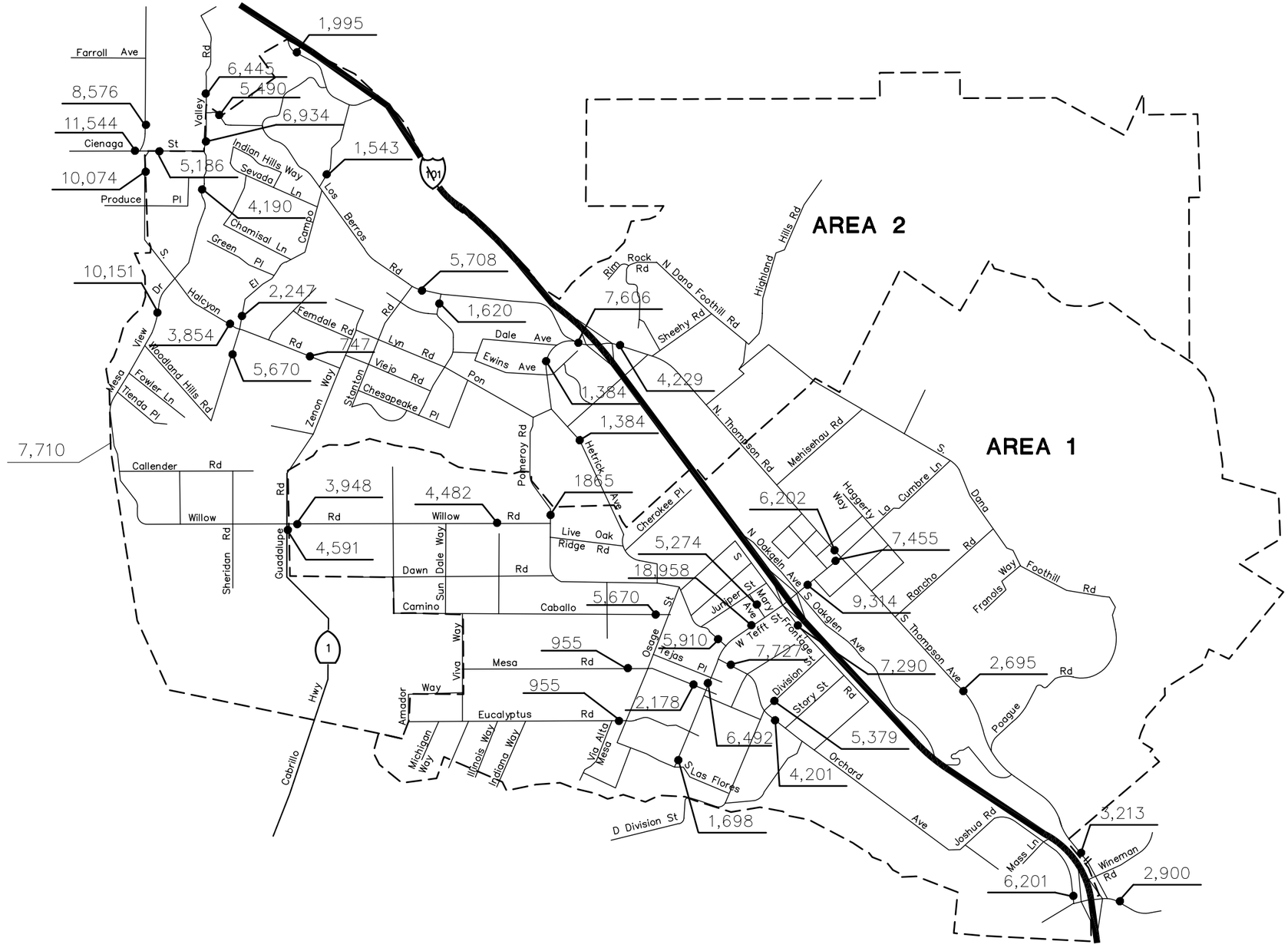

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Figure 2

EXISTING AVERAGE DAILY TRAFFIC

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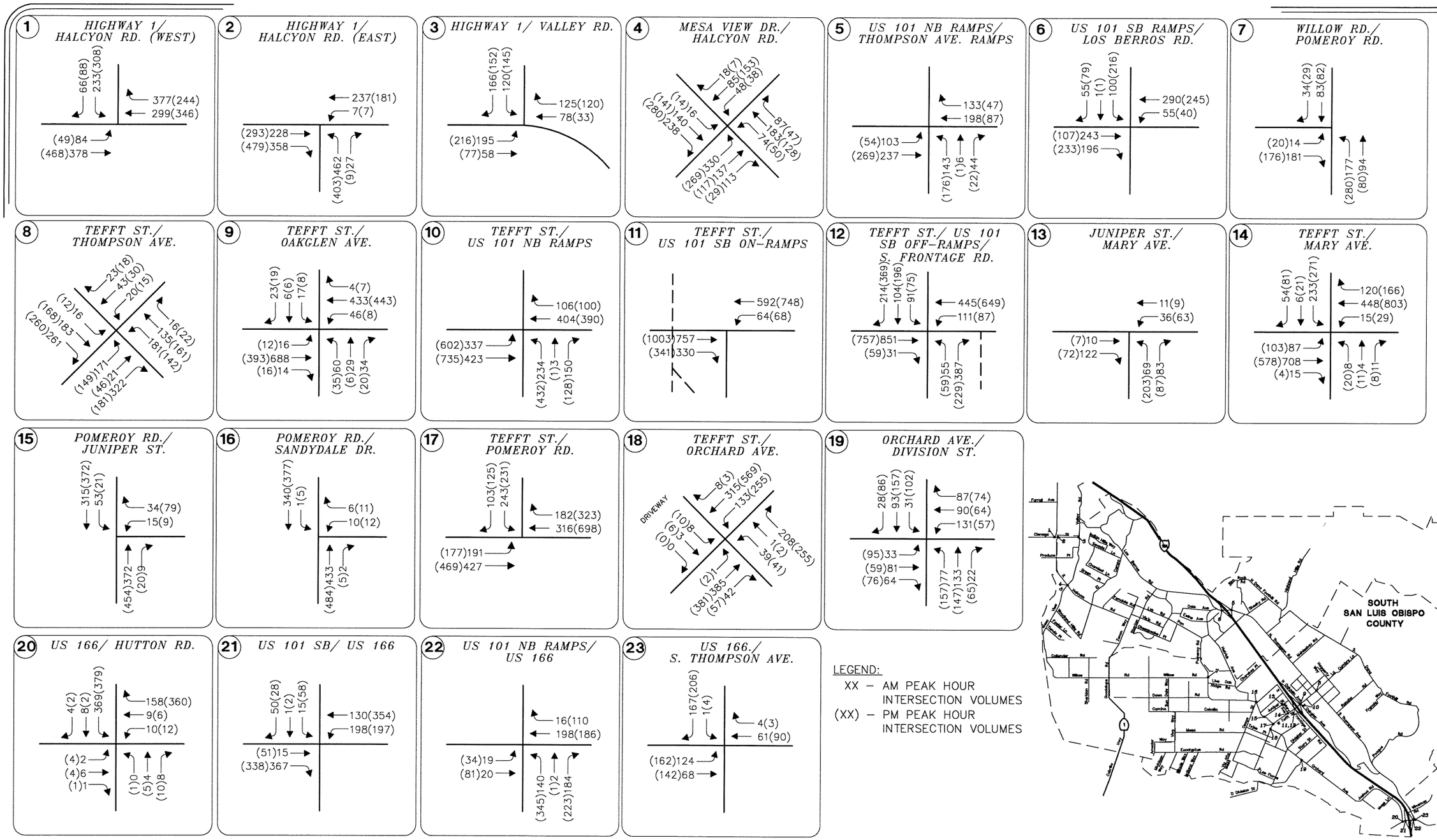
Intersections

To supplement the average daily traffic counts collected along select roadway segments and to provide background conditions for intersection traffic conditions, existing intersection traffic volume counts were collected by OMNI-MEANS on October 4, 2004. At the study intersections, weekday AM and PM peak hour were obtained. The AM peak hour is defined as the one-hour of peak traffic flow (which is the highest total volume count over four consecutive 15-minute count periods) counted between 7:00 AM and 9:00 AM on a typical weekday. The PM peak hour is defined as the one-hour of peak traffic flow (which is the highest total volume count over four consecutive 15-minute count periods) counted between 4:00 PM and 6:00 PM on a typical weekday.

The following list of critical study intersections were established for this study in coordination with San Luis Obispo County staff, and are analyzed within this study for weekday AM and PM peak hour conditions:

1. SR 1 at Halcyon Road (West)
2. SR 1 at Halcyon Road (East)
3. SR 1 at Valley Road
4. Mesa View Drive at Halcyon Road
5. US 101 northbound Ramps at Thompson Avenue
6. US 101 southbound Ramps at Los Berros Road
7. Willow Road at Pomeroy Road
8. Tefft Street at Thompson Avenue
9. Tefft Street at Oakglen Avenue
10. US 101 northbound Ramps at Tefft Street
11. US 101 southbound On-Ramp at Tefft Street
12. US 101 southbound Off-Ramp/South Frontage Road at Tefft Street
13. Juniper Street at Mary Avenue
14. Tefft Street at Mary Avenue
15. Pomeroy Road at Juniper Street
16. Pomeroy Road at Sandydale Drive
17. Tefft Street at Pomeroy Road
18. Tefft Street at Orchard Avenue
19. Orchard Avenue at Division Street
20. US 166 at Hutton Road
21. US 101 southbound Ramps at US 166
22. US 101 northbound Ramps at US 166
23. US 166 at South Thompson Avenue

Existing AM and PM peak hour traffic volumes at the study intersections identified above are shown on Figure 3. Lane geometrics at the study intersections are illustrated on Figure 4.



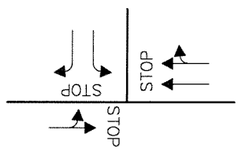
South County Nipomo Model Update

Figure 3

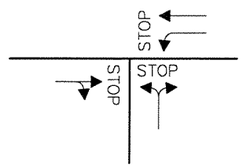
EXISTING PEAK HOUR INTERSECTION TRAFFIC VOLUMES

File: T795TG03.dwa (101304) 25-6462-05

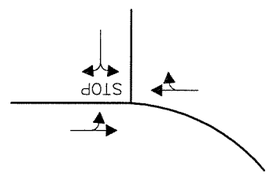
1 HIGHWAY 1/ HALCYON RD. (WEST)



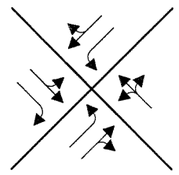
2 HIGHWAY 1/ HALCYON RD. (EAST)



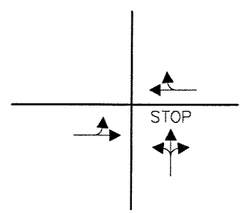
3 HIGHWAY 1/ VALLEY RD.



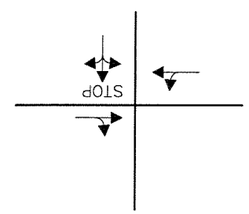
4 MESA VIEW DR./ HALCYON RD.



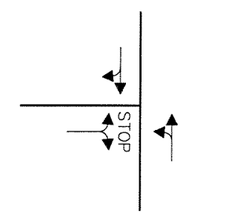
5 US 101 NB RAMPS/ THOMPSON AVE. RAMPS



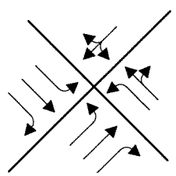
6 US 101 SB RAMPS/ LOS BERROS RD.



7 WILLOW RD./ POMEROY RD.



8 TEFFT ST./ THOMPSON AVE.



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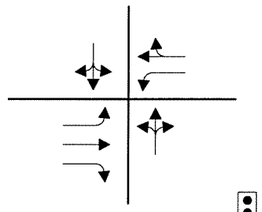

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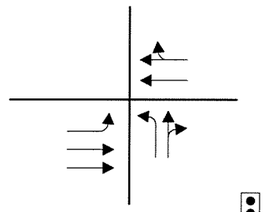
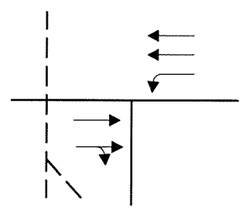
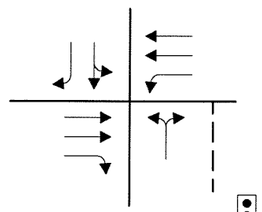


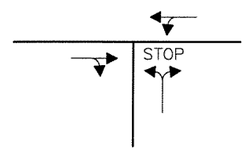
11 TEFFT ST./ US 101 SB ON-RAMPS



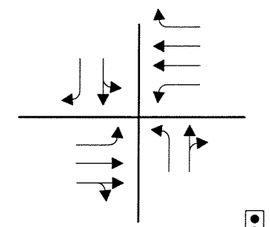
12 TEFFT ST./ US 101 SB OFF-RAMPS/ S. FRONTAGE RD.



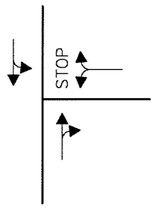
13 JUNIPER ST./ MARY AVE.



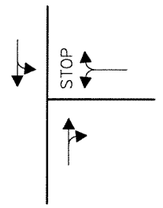
14 TEFFT ST./ MARY AVE.



15 POMEROY RD./ JUNIPER ST.



16 POMEROY RD./ SANDYDALE DR.



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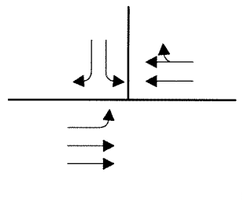
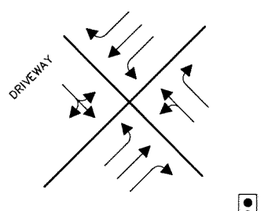
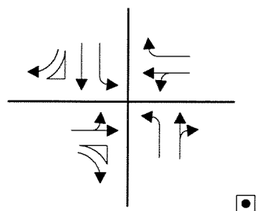


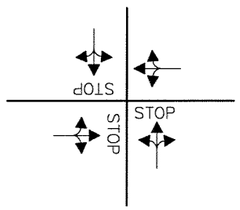
18 TEFFT ST./ ORCHARD AVE.



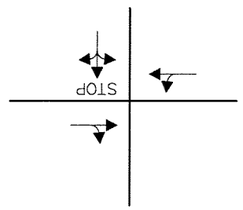
19 ORCHARD AVE./ DIVISION ST.



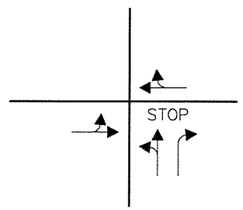
20 US 166/ HUTTON RD.



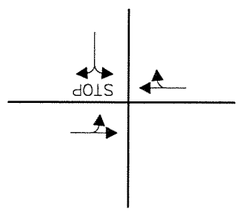
21 US 101 SB/ US 166

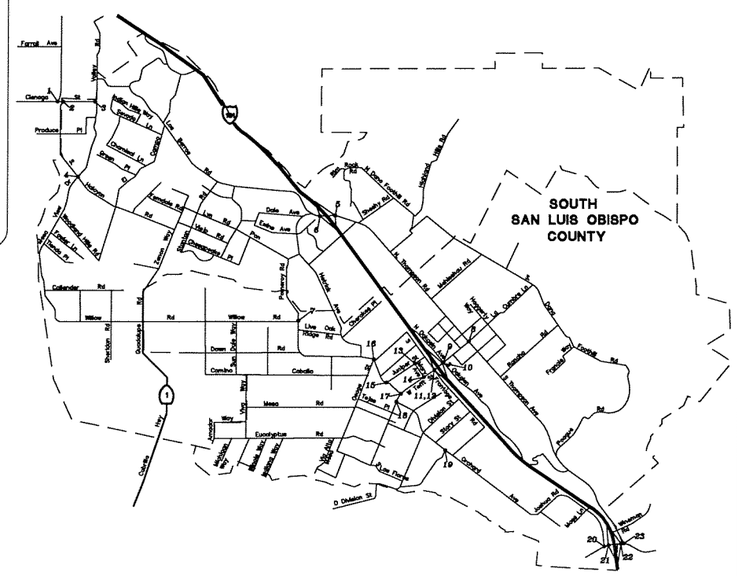


22 US 101 NB RAMPS/ US 166



23 US 166./ S. THOMPSON AVE.





South County Nipomo Model Update

Figure 4

EXISTING INTERSECTION GEOMETRICS AND CONTROL

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LEVEL-OF-SERVICE METHODOLOGY

Traffic operations have been quantified through the determination of "Level of Service" (LOS). Level of Service is a qualitative measure of traffic operating conditions, whereby a letter grade "A" through "F" is assigned to an intersection or roadway segment representing progressively worsening traffic conditions.

Roadway Segments

Roadway segment Levels-of-Service were estimated using Highway Capacity Manual 2000 (HCM-200) methodologies. For standard-sized roadways (e.g. urban arterials), LOS were estimated utilizing Average Daily Traffic (ADT)-based LOS thresholds. Table 1 shows the ADT-based roadway segment LOS thresholds utilized in this study.

However, the rural nature of the study area introduces the problem of roadways with non-standard characteristics, e.g. roadway lane widths less than 12 feet wide per lane, shoulders less than six feet wide, rough pavement, grade. Non-standard characteristics typically reduce roadway capacity from the traffic thresholds calculated for standard roadways. For the South County Nipomo planning area, non-standard roadways are limited to two-lane collector/local streets and two-lane arterials. The ADT-based roadway segment LOS thresholds presented in Table 1 for two-lane roadways include traffic volume ranges that take into account capacity reductions resulting from non-standard roadway features.

TABLE 1
LEVEL-OF-SERVICE (LOS) CRITERIA FOR ROADWAY SEGMENTS

Roadway Segment Type	Total Two-way Average Daily Traffic (ADT)				
	LOS "A"	LOS "B"	LOS "C"	LOS "D"	LOS "E"
4-Lane Divided Freeway	28,000	43,200	61,600	74,400	80,000
2-Lane Rural Highway	2,400	4,800	7,900	13,500	22,900
6-lane Divided Expressway (with left-turn lanes)	35,500	42,200	46,200	55,800	60,000
6-Lane Divided Arterial (with left-turn lane)	32,000	38,000	43,000	49,000	54,000
4-Lane Divided Arterial (with left-turn lane)	22,000	25,000	29,000	32,500	36,000
4-Lane Undivided Arterial (no left-turn lane)	18,000	21,000	24,000	27,000	30,000
2-Lane Arterial (with left-turn lane)	11,000	12,500	14,500	16,000	18,000
2-Lane Arterial (no left-turn lane)	1,000 - 9,000	2,000 - 10,500	3,500 - 12,000	6,500 - 13,500	7,500 - 15,000
2-Lane Collector/Local Street	1,000 - 6,000	2,000 - 7,500	3,000 - 9,000	3,000 - 10,500	5,000 - 12,000

Note: 1. Based on "Highway Capacity Manual", Transportation Research Board, 2000.

2. All volumes are approximate and assume ideal roadway characteristics. Actual threshold volumes for each Level of Service listed above may vary depending on a variety of factors including (but not limited to) roadway curvature and grade, intersection or interchange spacing, driveway spacing, percentage of trucks and other heavy vehicles, travel lane widths, signal timing characteristics, on-street parking, volume of cross traffic and pedestrians, etc.

Intersections

Levels of Service have also been calculated for all intersection control types using the methods documented in the Transportation Research Board Publication *Highway Capacity Manual, Fourth Edition, 2000*. For signalized intersections and all-way-stop-controlled (AWSC) intersections, the intersection delays and levels of service are average values for all intersection movements. For two-way-stop-controlled (TWSC) intersections, the intersection delays and levels of service are representative of those for the worst-case movement. Level of Service criteria for different types of intersection control are outlined in Table 2.

The Caltrans published *Guide for the Preparation of Traffic Impact Studies* (dated December 2002) states the following:

> *"Caltrans endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" on State highway facilities, however, Caltrans acknowledges that this may not be always feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS."*

Per the County of San Luis Obispo *2004 South County Circulation Study Update*:

> *"The current County policy calls for LOS "D" or better service on roadways in urban areas and LOS "C" on rural roads."*

Consistent with Caltrans and County policies quoted above, a peak hour LOS "C" has been taken as the general threshold for acceptable/tolerable operations at study intersections and roadways maintained by the County of San Luis Obispo falling outside urban areas, and LOS "D" has been taken as the general threshold for acceptable/tolerable operations at study intersections and roadway segments in urban areas maintained by the County of San Luis Obispo and areas maintained by the State (i.e., ramp intersections, and intersections along State Highways). Base improvements and required circulation improvements have been recommended for all instances where appropriate LOS standards are not met.

To determine whether "significance" should be associated with unsignalized intersection operations, a supplemental traffic signal "warrant" analysis has also been completed. The term "signal warrants" refers to the list of established criteria used by Caltrans and other public agencies to quantitatively justify or ascertain the need for installation of a traffic signal at an otherwise unsignalized intersection. This study has employed the signal warrant criteria presented in the latest edition of the Federal Highway Administration's (FHWA) *Manual on Uniform Traffic Control Devices (MUTCD),* as amended by the *MUTCD 2003 California Supplement,* for all study intersections. The signal warrant criteria are based upon several factors including volume of vehicular and pedestrian traffic, frequency of accidents, location of school areas etc. Both the FHWA's MUTCD and the *MUTCD 2003 California Supplement* indicate that the installation of a traffic signal should be considered if one or more of the signal warrants are met. The ultimate decision to signalize an intersection should be determined after careful analysis of all intersection and area characteristics.

This traffic study will specifically utilize the Peak-Hour-Volume based Warrant 3 as one representative type of traffic signal warrant analysis. Warrant 3 criteria are basically identical for both the FHWA's MUTCD and the *MUTCD 2003 California Supplement.* Since Warrant 3 provides specialized warrant criteria for intersections with rural characteristics (e.g. located in communities with populations of less than 10,000 persons or with adjacent major streets operating at above 40 mph), study intersections which use this specialized criteria will be clearly identified.

This traffic study focuses on a "planning level" evaluation of traffic operating conditions, which is considered sufficient for CEQA/NEPA purposes. The planning level evaluation incorporates appropriate heavy vehicle adjustment factors, peak hour factors, and signal lost time factors and reports the resulting intersection delays and LOS as estimated using the HCM-2000 based analysis methodologies. Based on discussions with the County, a Peak Hour Factor (PHF) of 0.85 was applied in the analysis of all study intersections under all

scenarios. Per HCM standards, a loss time of 4 seconds per critical movement is applied for the analysis of all signalized intersections. The *Traffix 7.7* (Dowling Associates) software program was used to implement the HCM-2000 analysis methodologies for isolated intersections. The *Synchro 7 (*Trafficware) software program was used to implement the HCM-2000 analysis methodologies for the Tefft Street corridor. *Synchro 7* takes into account intersection signal phasing and queuing constraints when calculating delay, the corresponding delay, and queue lengths. Assessment of "design level" parameters (including queuing on intersection lane groups, stacking length requirements, coordinated signal operations analyses, etc.) have not been included in this study.

TABLE 2
LEVEL OF SERVICE CRITERIA FOR INTERSECTIONS

LEVEL OF SERVICE	TYPE OF FLOW	DELAY	MANEUVERABILITY	CONTROL DELAY (SECONDS/VEHICLE)		
				SIGNALIZED	UNSIGNALIZED	ALL-WAY STOP
A	Stable Flow	Very slight delay. Progression is very favorable, with most vehicles arriving during the green phase not stopping at all.	Turning movements are easily made, and nearly all drivers find freedom of operation.	$\leq$ 10.0	$\leq$ 10.0	$\leq$ 10.0
B	Stable Flow	Good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.	Vehicle platoons are formed. Many drivers begin to feel somewhat restricted within groups of vehicles.	>10 and $\leq$ 20.0	>10 and $\leq$ 15.0	>10 and $\leq$ 15.0
C	Stable Flow	Higher delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, although many still pass through the intersection without stopping.	Back-ups may develop behind turning vehicles. Most drivers feel somewhat restricted	>20 and $\leq$ 35.0	>15 and $\leq$ 25.0	>15 and $\leq$ 25.0
D	Approaching Unstable Flow	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume-to-capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	Maneuverability is severely limited during short periods due to temporary back-ups.	>35 and $\leq$ 55.0	>25 and $\leq$ 35.0	>25 and $\leq$ 35.0
E	Unstable Flow	Generally considered to be the limit of acceptable delay. Indicative of poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures are frequent occurrences.	There are typically long queues of vehicles waiting upstream of the intersection.	>55 and $\leq$ 80.0	>35 and $\leq$ 50.0	>35 and $\leq$ 50.0
F	Forced Flow	Generally considered to be unacceptable to most drivers. Often occurs with over saturation. May also occur at high volume-to-capacity ratios. There are many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors.	Jammed conditions. Back-ups from other locations restrict or prevent movement. Volumes may vary widely, depending principally on the downstream back-up conditions.	> 80.0	> 50.0	> 50.0

References: 1. Highway Capacity Manual, Fourth Edition, Transportation Research Board, 2000.

EXISTING TRAFFIC OPERATIONS

Roadway Segments

Existing roadway segment operations were quantified utilizing HCM methodologies based on daily traffic volumes, on roadway facilities with standard roadway widths and shoulders, and peak hour traffic volumes, for roadway segments with substandard roadway widths and shoulders. The ADT-capacity thresholds are indicated in Table 1. The peak hour traffic volume methodologies utilize HCM-2000 methodologies for two-lane highways, arterials. The resulting ADT-based LOS estimates for study segments within the South County Nipomo planning area are presented in Table 3. The peak hour-based LOS estimates are presented in Table 4.

TABLE 3
EXISTING CONDITIONS: ROADWAY SEGMENT LEVELS-OF-SERVICE

Roadway Segment	Facility Type	ADT Count Year	Two-Way ADT Count	PM Peak Hour (10% ADT)[1]	PM Peak Hour LOS[2]
US 101 Mainline Corridor					
US 101 (n/o Los Berros Road interchange)	Four-lane Freeway	2004	56,000	-	B
US 101 (n/o Tefft Street interchange)	Four-lane Freeway	2004	57,000	-	B
US 101 (north of SR 166 interchange)	Four-lane Freeway	2004	55,000	-	B
US 101 (n/o Santa Barbara County line)	Four-lane Freeway	2004	64,000	-	C
Highway 1 Corridor					
Highway 1 (w/o Halcyon - west)	Two-lane Arterial	2004	11,544	-	C
Highway 1 (between Halcyon and Valley)	Two-lane Arterial	2005	5,186	-	A
Highway 1 (s/o Cienaga/Valley intersection)	Two-lane Arterial	2004	4,190	-	A
Highway 1 (south of Halcyon Road - south)	Two-lane Arterial	2004	10,151	-	B
Highway 1 (south of Willow Road)	Two-lane Arterial	2004	4,591	-	A
Tefft Street Corridor					
Tefft St (north of Las Flores Drive)	Two-lane Collector	2004	1,698	170	C
Tefft St (south of Tejas Place)	Three-lane Arterial (Two lane w\ center turn lane)	2005	6,492	650	B
Tefft St (west of Mary Ave)	Five-Lane Divided Arterial (Four lanes w\ center turn lane)	2005	18,023	1,800	B
Tefft St (east of Oakglen Ave)	Three-lane Arterial (Two lane w\ center turn lane)	2005	9,314	930	C
Tefft St (west of Thompson Ave)	Three-lane Arterial (Two lane w\ center turn lane)	2004	7,455	750	C
Los Berros Road Corridor					
Los Berros Rd (east of Valley Rd)	Two-lane Collector	2005	5,490	550	C
Los Berros Rd (east of Stanton Rd)	Two-lane Collector	2005	5,708	570	C
Los Berros Rd (west of US 101)	Two-lane Arterial	2004	7,606	760	C
Thompson Street Corridor					
Thompson St (south of US 101)	Two-lane Arterial	2004	4,229	420	C
Thompson St (north of Tefft St)	Two-lane Arterial	2004	6,202	620	C
Thompson St (north of SR 166)	Two-lane Collector	2004	3,213	320	C
Pomeroy Road Corridor					
Pomeroy Rd (south of Los Berros Rd)	Two-Lane Collector	2004	1,620	160	B
Pomeroy Rd (north of Willow Rd)	Two-Lane Collector	2005	1,865	190	B
Pomeroy Rd (north of Tefft St)	Two-Lane Collector	2005	5,910	590	C

Note: 1. 10% peak daily factor derived from overall average in peak hour volumes when compared to daily volumes from 2004 counts.
2. Highway Capacity Manual 2000 methodology for 2-lane highways, arterials. LOS is based on the individual characteristics of each roadway, not on the ADT-based threshold table (Table 1).

TABLE 3 (CONTINUED)
EXISTING CONDITIONS: ROADWAY SEGMENT LEVELS-OF-SERVICE

Roadway Segment	Facility Type	ADT Count Year	Two-Way ADT Count	PM Peak Hour (10% ADT)[1]	PM Peak Hour LOS[2]
El Campo Road Corridor					
El Campo Rd (south of Halcyon Rd)	Two-Lane Collector	2005	5,670	570	C
El Campo Rd (north of Halcyon Rd)	Two-Lane Collector	2004	2,247	220	B
El Campo Rd (south of US 101)	Two-Lane Collector	2004	1,995	200	B
Halcyon Road Corridor					
Halcyon Rd (n/o Cienaga Rd/Highway 1)	Two-lane Collector	2005	8,576	860	C
Halcyon Rd (south of Cienaga Rd)	Two-lane Collector	2005	10,074	1,010	D
Halcyon Rd (west of El Campo Rd)	Two-lane Collector	2004	3,854	390	C
Orchard Street Corridor					
Orchard St (south of Tefft St)	Two-lane Collector	2005	7,727	770	C
Orchard St (south of Southland St)	Two-lane Collector	2004	4,021	400	C
Hutton Rd (north of SR 166)	Two-lane Arterial	2005	6,201	620	C
Other facilties					
Camino Caballo (west of Osage St)	Two-lane Collector	2005	5,670	570	C
Division St (west of Orchard Ave)	Two-lane Arterial	2004	5,379	540	C
Eucalyptus Rd (west of Osage St)	Two-lane Collector	2005	955	100	A
Hetrick Ave (south of Summit Station Rd)	Two-lane Collector	2004	807	80	A
Mary Ave (north of Tefft St)	Two-lane Arterial	2004	5,274	530	C
Mesa Rd (west of Tefft St)	Two-lane Collector	2004	2,178	220	B
Mesa Rd (west of Osage St)	Two-lane Collector	2005	955	100	A
South Frontage Rd (south of Tefft St)	Two-lane Collector	2005	7,290	730	C
Summit Station Rd (south of Los Berros Rd)	Two-lane Collector	2004	1,384	140	B
Willow Rd (east of Highway 1)	Two-lane Arterial	2004	3,948	390	C
Willow Rd (west of Pomeroy Rd)	Two-lane Arterial	2005	4,482	450	C
Valley Rd (north of Highway 1)	Two-lane Arterial	2005	6,455	650	C

Note

1. 10% peak daily factor derived from overall average in peak hour volumes when compared to daily volumes from 2004 counts
2. Highway Capacity Manual 2000 methodology for 2-lane highways, arterials. LOS is based on the individual characteristics of each roadway, not on the ADT-based threshold table (Table 1).

As shown in Table 3, several roadway segments along Tefft Street and Halcyon Road are estimated to currently operate at LOS "D" or worse on a daily basis. Roadway facility characteristics used to calculate peak-hour LOS estimates, e.g. lane width, shoulder width, and speed limit, are included in the Appendix.

Intersections

Existing peak hour intersection traffic operations were quantified by applying existing traffic volumes (shown on Figure 3) and existing intersection lane geometrics and control (shown on Figure 4). Table 4 presents the existing peak hour intersection levels of service.

TABLE 4
EXISTING CONDITIONS: INTERSECTION LEVELS-OF-SERVICE

			AM Peak Hour			PM Peak Hour		
#	Intersection	Control Type	Delay	LOS	Warrant Met?	Delay	LOS	Warrant Met?
1	**Highway 1/Halcyon Road (west)**	**AWSC**	**25.9**	**D**	**Yes**	**41.9**	**E**	**Yes**
2	**Highway 1/Halcyon Road (east)**	**AWSC**	**63.0**	**F**	**Yes**	**107.1**	**F**	**Yes**
3	Highway 1/Valley Road	TWSC	13.4	B	No	22.3	C	No
4	Mesa View Drive/Halcyon Road	Signal	22.7	C	-	22.5	C	-
5	**US 101 NB Ramps/Thompson Avenue**	**TWSC**	**25.8**	**D**	**No**	18.7	C	No
6	US 101 SB Ramps/Los Berros Road	TWSC	20.2	C	No	24.6	C	No
7	Willow Road/Pomeroy Road	TWSC	10.5	B	No	11.0	B	No
8	Tefft Street/Thompson Avenue	Signal	28.6	C	-	26.1	C	-
9	Tefft Street/Oakglen Avenue	Signal	14.4	B	-	8.9	A	-
10	**US 101 NB Ramps/Tefft Street**	**Signal**	**27.2**	**C**[2]	**-**	**31.2**	**C**[2]	**-**
12	**US 101 SB Ramps/South Frontage Road/Tefft Street**[1]	**Signal**	**49.0**	**D**[1]	**-**	**60.5**	**E**[1]	**-**
13	Juniper Street/Mary Avenue	TWSC	11.2	B	No	12.1	B	No
14	Tefft Street/Mary Avenue	Signal	23.1	C	-	24.5	C	-
15	Pomeroy Road/Juniper Street	TWSC	13.5	B	No	13.7	B	No
16	Pomeroy Road/Sandydale Drive	TWSC	14.6	B	No	15.6	C	No
17	Tefft Street/Pomeroy Road	Signal	24.4	C	-	23.7	C	-
18	Tefft Street/Orchard Avenue	Signal	18.8	B	-	17.5	B	-
19	Orchard Avenue/Division Street	Signal	22.3	C	-	27.3	C	-
20	US 166/Hutton Road	TWSC	11.4	B	No	13.8	B	No
21	**US 101 SB Ramps/US 166**	**TWSC**	11.9	B	No	**27.3**	**D**	**No**
22	US 101 NB Ramps/US 166	TWSC	10.3	B	No	18.2	C	Yes
23	US 166/South Thompson Avenue	TWSC	17.3	C	No	9.9	A	No

Legend: TWSC = Two-Way-Stop Control. AWSC = All-Way-Stop Control. , OVR – Over Capacity
Warrant = Caltrans Peak hour-Volume based Signal Warrant-11 (Urban Areas) – for freeway ramp intersections
Warrant = MUTCD Peak hour-Volume based Signal Warrant-11 (Urban Areas) – for all other intersections
Bolded Intersection, Delays, and LOS indicate intersections operating at deficient LOS "D" or worse for intersections within County right-of way, and LOS "E" and "F" for intersections within Caltrans right of way.

1. *Intersection 11 (US 101 SB on-ramp/Tefft Street) forms the fifth leg of Intersection 12.*
2. *Due to closely spaced intersections, queue back-up on Tefft Street in the vicinity of the US 101 SB ramp/Tefft Street intersection may affect the actual travel demand through the US 101 northbound ramp/Tefft Street intersection, thereby resulting in a lower calculated delay and corresponding LOS.*

As shown in Table 4, the SR 1 intersections at Halcyon Road (east and west) are currently operating at deficient LOS "E" or worse during at least one peak hour period. The SR 1/Halcyon Road (east and west) intersections and the US 101 northbound ramp/US 166 intersection meet peak-hour-volume based signal warrants, indicating that the peak-hour-volume of minor-street vehicles experience unacceptable delays and are significantly large to warrant installation of a traffic signal at this location.

The US 101 southbound off-ramp intersection at Tefft Street and South Frontage Road (Intersection 12) operates at unacceptable LOS "D" and "E" during the AM and PM peak hours, respectively. This intersection is closely spaced with the Tefft Street/US 101 SB on-ramp intersection (Intersection 11), such that the US 101 southbound on-ramp is essentially the fifth leg of the US 101 southbound off-ramp/Tefft Street intersection, and the Tefft Street/US 101 NB ramp intersection (Intersection 10). The staggered alignment and close

spacing of these intersections essentially impose the same delay from Intersection 12 to Intersection 11. Moreover, the constrained operations at the Tefft Street/US 101 southbound ramp intersections meter the eastbound traffic volumes at the Tefft Street/US 101 northbound ramp intersection, thereby artificially reducing the represented demand at the intersection. This metering condition is noted in footnote 2 of Table 4.

EXISTING LAND USES

According to the San Luis Obispo Inland South County General Plan (last revision January 2004), the South County Nipomo planning area encompasses 82,000 acres (128 square miles). According to a review of the parcel land use database (in GIS format) provided by County staff, 39,460 acres out of the 82,000 acres are within the existing South County Traffic Fee area, and therefore included in the traffic model area. A summary of the County's General Plan land use designations is shown below in Table 5. Appendix 1 lists the quantities and status of development of land uses within the County's planning area by Traffic Analysis Zone (TAZ).

TABLE 5
EXISTING LAND USES

Land Use	Units	Area 1	Area 2	Total
Residential				
Single-Family	DU	4,529	1,720	6,249
Multi-Family	DU	273	2	275
Mobile Homes	DU	683	416	1,099
Non-Residential				
Hi-generating Retail	KSF	213	96	309
Low-generating Retail	KSF	496	64	560
General Office	KSF	31	0	31
Med Office	KSF	21	21	42
Light Industrial	KSF	97	581	678
Heavy Industrial	KSF	95	959	1,054
Schools	Acres	96	11	107
Govt/Public	Acres	66	0	66
Churches	Acres	35	23	59
Parks/ Recreational	Acres	268	181	449
Agriculture	Acres	1,320	2,627	3,947
Specialty Agriculture (Greenhouse)	Acres	482	179	661
Misc/ Other	Acres	15	89	104

Chapter 3

TRAFFIC MODEL DEVELOPMENT AND BASE YEAR MODEL CALIBRATION

This chapter presents the supporting technical documentation for the South County Nipomo traffic model development process.

DATA SOURCES

The travel demand model is based on land use information at parcel level resolution as provided by the County of San Luis Obispo Engineering Department in ESRI Arc View Shape file format. The parcel, road and county limit shape file were projected into California State Plane, Zone IV, US Foot, coordinate systems using the Lambert Conformal Conic projection.

DATA EVALUATION

In order to generate an accurate representation of the existing land use patterns within the study area, an evaluation of the parcel land use data was performed. The County assessor uses a numeric code to describe the land use of parcels within the County. The model roadway network was created using existing roadway maps and the parcel shape file.

The Traffic Analysis Zones (TAZs) creation process begins by determining which parcels contribute traffic to the model network roads. Each parcel is analyzed to determine how the traffic it generates will logically shed to the model network. A TAZ is composed of all the parcels that shed to common model network roads. Creation of the model network is completed with the addition of centroid connectors from the TAZs.

CHOICE OF MODEL SOFTWARE – TP+/VIPER

The integrated urban transportation planning software package called *TP+/Viper* (copyright *Citilabs*) was the modeling software of choice for the South County Nipomo area traffic model. The *TP+/Viper* package represents a powerful and widely known modeling environment that provides a Windows-based implementation of the traditional four-step urban transportation planning methodology. *TP+* also represents the next-generation version of the popular *MINUTP* planning software package. *TP+* is the underlying modeling "engine" that performs all of the model computations. *Viper* (acronym for Visual Planning Environment) represents a graphical user interface that works seamlessly with the *TP+* system, processing input as well as output data needed/generated by *TP+*. OMNI-MEANS utilized the latest (as of October 2004) version of *TP+/Viper* (Version 3.1.2) for the South County Nipomo area traffic model. *Citilabs* (formerly *Urban Analysis Group*), who are the developers and vendors of the *TP+/Viper* package, should be contacted by the user in order to obtain a licensed copy of the software and detailed description on the full technical capabilities of the software.

The following steps describe how the basic components of the model were developed.

CREATION OF TAZ MAP

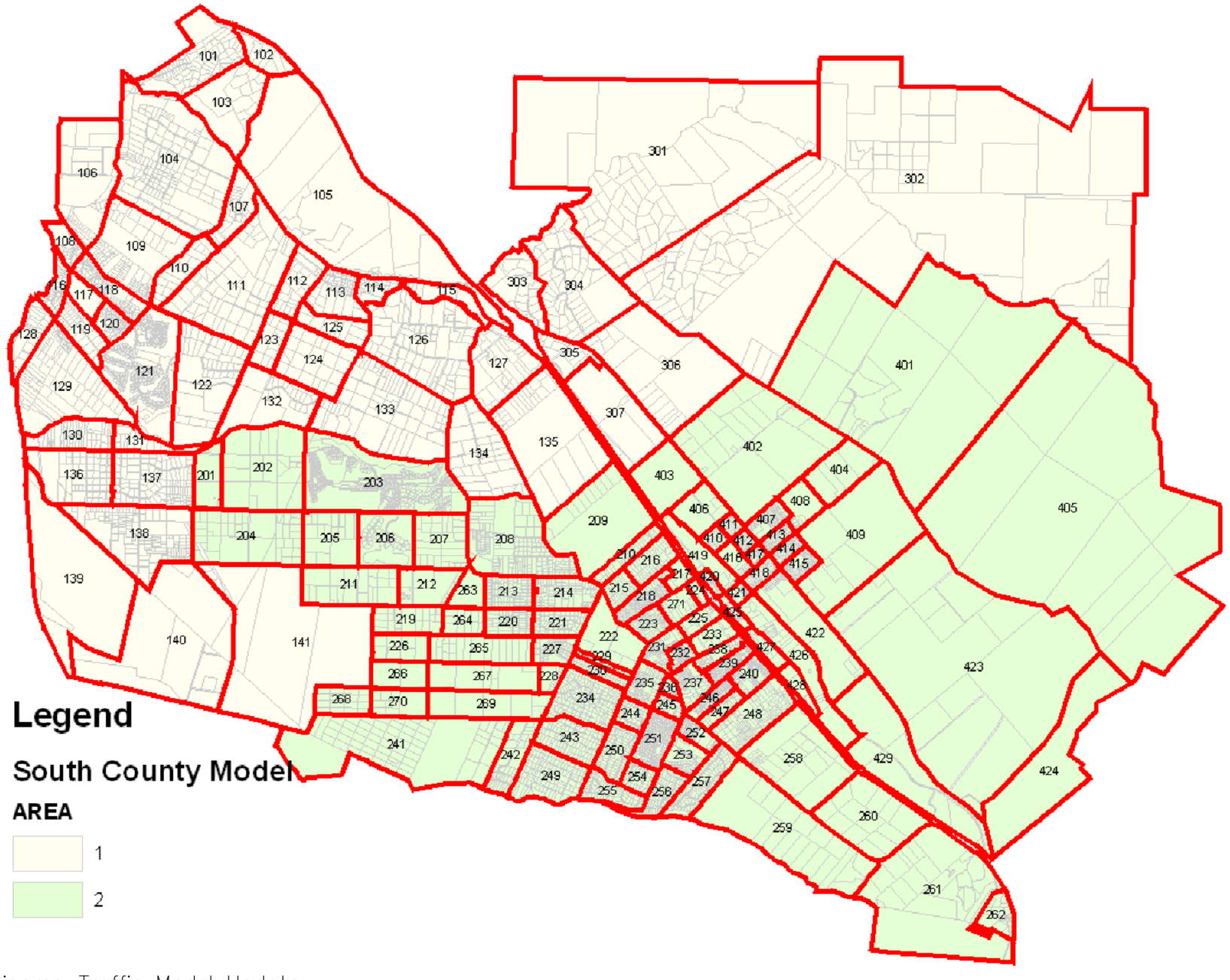
The first modeling step was the creation of a land use database that can be read by the model. The land use information, as read by the model, is organized into discrete traffic-generating units referred to as "Traffic Analysis Zones" (TAZ's). A TAZ is defined as a geographical area that comprises of contiguous land development (parcels, subdivisions etc.) aggregated into a "traffic shed" for modeling purposes. Each TAZ would have one or more "connectors" feeding traffic generated from that TAZ on to the adjacent street system at logical but schematic access points. The TAZ definitions were developed using closed boundaries contained within natural geographic barriers like rivers, creeks etc., as well as "man-made" barriers like major

street right-of-ways, railroads etc., and taking into account how traffic generated from localized development would logically "shed" to the adjacent street system.

Utilizing the County's parcel mapping database (in GIS format) in conjunction with the US Census 2000 based Census tract and block-group boundaries within the South County Nipomo planning area, a "TAZ Map" that consists of a system of TAZ's for the South County Nipomo planning area was developed using *AutoCAD Map* and then imported into *TP+/Viper*. For the entire South County Nipomo planning area, a total of 155 TAZs were defined. A TAZ numbering scheme was developed for purposes of enhancing computational advantages as well as to have the potential ability to expand the TAZ definitions later, if found necessary. The TAZ numbering scheme is described as follows:

- TAZs in the northwest quadrant of the South County (west of U.S. 101 and north of the existing fee boundary) are numbered in the 100's.
- TAZs in the southwest quadrant of the South County (west of U.S. 101 and south of the existing fee boundary) are numbered in the 200's.
- TAZs in the northeast quadrant of the South County (east of U.S. 101 and north of the existing fee boundary) are numbered in the 300's.
- TAZs in the southeast quadrant of the South County (east of U.S. 101 and south of the existing fee boundary) are numbered in the 400's.

Area 1 contains TAZs numbered in the 200s and 400s. Area 2 contains TAZs numbered in the 100s and 300s. The South County Nipomo Traffic Model's TAZ Map with the TAZ numbers posted is shown in Figure 5.



South County Nipomo Traffic Model Update

Figure 5

TAZ Boundary Map

File: T795TG05.dwg (101404) 25-6462-05

LAND USE –TAZ INTEGRATION

Land use information represents the primary basis for deriving vehicular travel/traffic flow patterns on the County street system. Therefore, land use data, categorized basically in terms of residential and non-residential uses, was summarized under each TAZ, in order to provide a basis for estimating zonal trip productions and attractions.

In order to incorporate existing land use data into the TAZs, OMNI-MEANS utilized San Luis Obispo County Assessors parcel data on all County parcels, as obtained through County planning staff. The assessor's parcel database contained a variety of information, including Assessor's Parcel Number (APN), parcel size (in acreage/square feet), assessed land value and improvements value, existing County land use code for the parcel, property ownership and address information. In all, the APN records in the database contained over 200 land use codes ranging from single-family dwelling units to retail uses to agricultural uses.

Existing residential units were categorized into single-family dwelling units, multi-family dwelling units and mobile homes, for all TAZs. For non-residential uses, the County land use codes provided within the APN database was used to summarize acreage/square feet of existing non-residential use, by development type.

The TAZ map, originally created with *AutoCAD*, was imported into *ArcView* Geographic Information Systems (GIS) software environment as a "shape-file". By geographically overlaying San Luis Obispo County's Assessors' parcel database on top of the TAZ shape-file, a TAZ-wise breakdown of existing development was prepared. The integrated TAZ map (in shape-file format) and land use data (in DBF format) were exported from *ArcView* for subsequent use with the model. The existing conditions land use database summarized by TAZ is included in the Appendix.

NETWORK CREATION

The next step was the creation of a street network system that the model would utilize to distribute and assign trips generated by the land use database. The model's street network was first created by editing and manipulating centerlines of the County's parcel using *AutoCAD Map* software and then the "shape-files" were imported into *TP+/Viper* for further editing and attribute enhancements. Each "node" in the network represents an intersection or some other intermediate point on the street system. Each "link" in the network represents a roadway segment connecting between two nodes.

Using an "overlay" of the TAZ Map on top of the street network, additional nodes that represent "TAZ centroids" and additional links that represent "centroid connectors" were defined. The TAZ centroid is a logical point within a TAZ where all land development contained within that TAZ may be assumed to be concentrated, for traffic modeling purposes. The centroid connectors are schematic links that carry traffic (in both directions) between the TAZ centroids and the adjacent street system. Special zones known as "gateways" were also coded in order that the terminal links of the model can be connected to "external" sources of traffic generation. In all, nine (9) gateways were defined. Thus, with 147 TAZs and 9 gateways, the model system had a total of 156 traffic-generating zones. The TAZ centroids, centroid connectors, and gateways were all integrated into a single *TP+/Viper* network layer.

Using *ArcView*, a database (in DBF format) of records containing "attributes" of each link was then coded and attached to the network shape file. The link attributes coded include start and end node numbers, length of link segment, speed class, capacity class, number of lanes per direction, flag variable indicating one-way/two-way link directionality, and two-way daily traffic counts at critical locations where count data was obtained/ available. Figure 6 shows the Existing conditions *Viper* street network used in the model.

South County Nipomo Traffic Model Update

Figure 6

Network Map

File: T795TG06.dwg (101404) 25-6462-05

MODEL JOB-STREAM CREATION

The next step in the creation of the model was the coding of the *TP+* "job-stream" script file. The "job-stream" is a standard industry term used to refer to the computer file that contains the basic set of "instructions" issued to the *TP+* modeling engine as to how to perform model tasks and what methodologies, parameters and assumptions to apply in individual tasks. The job-stream file was written using the *TP+* scripting language syntax and contains the following modules.

Trip Generation

As a "pre-processor" to the trip generation module, the land use quantities already summarized by TAZ were first grouped into broader categories for trip generation purposes. These include "trip production" categories that include single-family and multi-family residential dwelling units, and "trip attraction" categories that include retail, office, industrial, recreational, governmental, educational, and other (miscellaneous) non-residential land uses. Within the pre-processor (which can be run using spreadsheet software like *Excel*), the individual land use quantities were multiplied with trip generation rates and grouped in the above categories in order to obtain an estimate of total daily trip generation by TAZ and by land use type. The trip generation rates were obtained using the industry-standard Institute of Transportation Engineers (ITE) Publication *Trip Generation (Seventh Edition)*. Since the South County Nipomo area model was not envisioned to have a separate transit component, generic vehicle trip generation rates were used.

The daily trip generation tables, prepared using the pre-processor, were imported into *TP+/Viper* in DBF format. The *TP+* trip generation module performs trip generation by invoking the "TRIPGEN" command function of *TP+*. The trip generation module disaggregated the individual TAZ trip generation by "trip purpose". In this model, there are three basic trip purposes. Home-based Work (HBW), Home-based Other (HBO), and Non-Home-based (NHB) trips were defined. For each TAZ, trip "productions" and trip "attractions" were estimated by trip purpose. Finally, a "production controlled" trip total adjustment was performed such that the trip attractions total equaled the trip productions total for each trip purpose.

Trip Distribution

Prior to the trip distribution process, an initial matrix of travel times between all pairs of zones was built. Special adjustments to gateway-to-gateway impedances were performed so that gateway productions and attractions would be matched internally as either internal-external (I-X) or external-internal (X-I) trips. A "friction factor" file that specifies impedance factors as a function of travel time was built for use with the trip distribution equations. A matrix of special zone-to-zone adjustment factors (referred to as "K factors") was also built so that inter-zonal travel characteristics, which cannot be solely explained using link impedances, could be accounted for.

The trip distribution module performs trip distribution by invoking the "TRIPDST" command function of *TP+*. In this model, the conventional "gravity-based" trip distribution model was applied. The gravity model assumes that the trips between two zones are directly proportional to the number of trips produced by the production zone and the number of trips attracted by the attraction zone and inversely proportional to the impedance (travel time, travel distance, travel cost, etc.) on the travel paths between the two zones. The travel time matrices, friction factors and K-factors were incorporated in the trip distribution process. As an end product of the trip distribution process, a production-attraction trip matrix between all zone pairs was created for each trip purpose.

Trip Balancing
The trip matrices in "production-attraction" format were converted to "origin-destination" format by using a symmetrical matrix transpose operation, by invoking the "matrix" command function of *TP+*. Finally, the gateway-to-gateway (or external-external, X-X) trips were superimposed over the origin-destination trip matrix. This final trip matrix was then used for trip assignment.

Trip Assignment
The final trip matrix was assigned to the street network using the "HWYLOAD" command function of *TP+*. The Equilibrium assignment procedure was used. Capacities for network links were computed incorporating capacity and speed class definitions as well as number of travel lanes on the facilities. Capacity-specific congested travel time expressions for each capacity class were utilized in the trip assignment process. Turn restrictions and impedances at specific nodes (intersections) were also incorporated as needed. The assigned daily trip volumes were "loaded" on to the street network as a new attribute computed by the *TP+* program.

MODEL CALIBRATION AND POST-CALIBRATION ANALYSES

The steps described above represent the creation of a complete but "un-validated" base year model. To calibrate the model to available field data, several model runs with different parameter adjustments were tested in order that average daily traffic forecasts at critical locations and screen-line analyses yielded satisfactory levels of accuracy. Localized adjustments that included trip generation adjustments for specific zones, refinement of link speeds and capacities, adjustment of congested travel time expressions etc., were tested until realistic and acceptable forecasts were obtained.

To help with post-assignment calibration procedure, a module was included in the job-stream to compute the percentage deviations between model forecasts and ground counts at locations where daily traffic counts were taken/available. Model forecasts were regarded as being acceptable if percentage deviations fell within *Root Mean Square Error* (RMSE) target ranges set by roadway type. The RMSE is a type of generalized standard deviation, regarded as an industry standard for model calibration. The RMSE-based calibration method provides for a stricter calibration standard on high-capacity, high-volume facilities like arterial streets, while allowing for larger margins of error on low-capacity, low-volume facilities like collectors and local streets. However, given modeling limitations, it is often possible to exceed the RMSE standard on low-volume, low capacity facilities (that carry less than 3,000 vehicles per day) without significantly affecting level of service or improvement thresholds established for these low-volume street segments. Therefore, a difference of less than 1,000 vehicles per day in the absolute magnitude of variation is regarded as acceptable for most low-volume facilities. Conversely, on high-volume, high capacity facilities (that carry upwards of 8,000 vehicles on a daily basis) it is possible to meet the RMSE target even when absolute magnitude of variation is well over 1,000 vehicles per day. Therefore, often a combination of RMSE standards and absolute magnitude of variation best meets model calibration target requirements.

Table 6 presents a calibration summary that shows the existing ground counts at critical locations, model forecasted traffic volumes at those locations, percentage deviations, and acceptability of model forecasts at these locations using the following calibration methods:

- **Point Calibration** – is the most basic and strictest calibration method, where the existing ground counts at critical "spot" locations, and model forecasted traffic volumes at those locations are directly compared, and acceptability of model forecasts at those locations is determined. As indicated in Table 6, at the spot locations, the model forecasts were regarded as being satisfactory if the ADT forecasts fall within the RMSE target established by facility type, and/or the absolute ADT difference is less than 1,000 vehicles per day.

- **Screenline Calibration –** is a calibration method whereby travel/traffic demands are investigated over a set of parallel travel routes or corridors as opposed to just individual routes or corridors. A "screenline corridor" is defined as a set of individual; generally parallel roadway facilities which, between them, address the total travel demand across an imaginary line (which is the screenline) drawn perpendicular to those facilities. As also indicated in Table 7, for screenline corridors the model forecasts were regarded as being satisfactory if the total screenline ADT forecasts fall within the RMSE target established by screenline capacity type, and/or the absolute total ADT difference is less than 1,000 vehicles per day.

TABLE 6
EXISTING CONDITIONS TRAFFIC MODEL – ADT CALIBRATION SUMMARY

#	Roadway Segment	Facility Type	ADT Count Year	Two-Way ADT Count	Model Forecasted ADT	ADT Diff.	Percent Diff.	RMSE Target % (+/-)	RMSE Target Met ?	Model Forecast Satisfactory?
	POINT CALIBRATION AND CORRIDOR CALIBRATION ANALYSIS									
	US 101 Mainline Corridor									
1	US 101 (north of Los Berros Road interchange)	Four-lane Divided Freeway	2004	56,000	58,418	2,418	4.3	7.0	Yes	Yes
2	US 101 (north of Tefft Street interchange)	Four-lane Divided Freeway	2004	57,000	56,371	-629	2.5	7.0	Yes	Yes
3	US 101 (north of SR 166 interchange)	Four-lane Divided Freeway	2004	55,000	56,273	1,273	-1.3	7.0	Yes	Yes
4	US 101 (north of Santa Barbara County line)	Four-lane Divided Freeway	2004	64,000	65,894	1,894	3.0	7.0	Yes	Yes
	Total			**232,000**	**236,956**	**4,956**	**2.1**	**7.0**	**Yes**	**Yes**
	Highway 1 Corridor									
1	Highway 1 (w/o Halcyon - west)	Two-lane Arterial	2004	11,544	11,349	-195	-1.7	15.0	Yes	Yes
2	Highway 1 (between Halcyon and Valley)	Two-lane Arterial	2005	5,186	5,526	340	6.6	15.0	Yes	Yes
3	Highway 1 (s/o Cienaga/Valley intersection)	Two-lane Arterial	2004	4,190	4,995	805	19.2	15.0	No	Yes
4	Highway 1 (south of Halcyon Road - south)	Two-lane Arterial	2004	10,151	10,364	213	2.1	15.0	Yes	Yes
5	Highway 1 (south of Willow Road)	Two-lane Arterial	2004	4,591	4,624	33	0.7	16.0	Yes	Yes
	Total			**35,662**	**36,858**	**1,196**	**3.4**	**15.0**	**Yes**	**Yes**
	Tefft Street Corridor									
1	Tefft St (east of Las Flores Drive)	Two-lane Collector	2004	1,698	1,357	-341	-20.1	15.0	No	Yes
2	Tefft St (west of Tejas Place)	Three-lane Arterial	2005	6,492	7,733	1,241	19.1	15.0	No	No
3	Tefft St (west of Mary Ave)	Five-lane Arterial	2005	18,023	19,745	1,722	9.6	15.0	Yes	Yes
4	Tefft St (east of Oakglen Ave)	Two-lane Collector	2005	9,314	8,886	-428	-4.6	15.0	Yes	Yes
5	Tefft St (west of Thompson Ave)	Two-lane Collector	2004	7,455	6,703	-752	-10.1	15.0	Yes	Yes
	Total			**42,982**	**44,424**	**1,442**	**3.4**	**15.0**	**Yes**	**Yes**
	Los Berros Road Corridor									
1	Los Berros Rd (east of Valley Rd)	Two-lane Collector	2005	5,490	5,652	162	3.0	15.0	Yes	Yes
2	Los Berros Rd (east of Stanton Rd)	Two-lane Collector	2005	5,708	5,965	257	4.5	15.0	Yes	Yes
3	Los Berros Rd (west of US 101)	Two-lane Arterial	2004	7,606	8,699	1,093	14.4	15.0	Yes	Yes
	Total			**18,804**	**20,316**	**1,512**	**8.0**	**15.0**	**Yes**	**Yes**

Notes: Model Forecast is regarded as satisfactory if RMSE target is met or absolute ADT difference is less than 1,000 vehicles per day.

TABLE 6 (CONT'D)
EXISTING CONDITIONS TRAFFIC MODEL – ADT CALIBRATION SUMMARY

#	Roadway Segment	Facility Type	ADT Count Year	Two-Way ADT Count	Model Forecasted ADT	ADT Diff.	Percent Diff.	RMSE Target % (+/-)	RMSE Target Met ?	Model Forecast Satisfactory?
	POINT CALIBRATION AND CORRIDOR CALIBRATION ANALYSIS									
	Thompson Street Corridor									
1	Thompson St (south of US 101)	Two-lane Arterial	2004	4,229	5,151	922	21.8	15.0	No	Yes
2	Thompson St (north of Tefft St)	Two-lane Arterial	2004	6,202	4,977	-1,225	-19.8	15.0	No	No
3	Thompson St (north of SR 166)	Two-lane Collector	2004	3,213	3,823	610	19.0	15.0	No	Yes
	Total			**13,644**	**13,951**	**307**	**2.3**	**15.0**	**Yes**	**Yes**
	Pomeroy Road Corridor									
1	Pomeroy Rd (south of Los Berros Rd)	Two-Lane Collector	2004	1,620	2,611	991	61.2	25.0	No	Yes
2	Pomeroy Rd (north of Willow Rd)	Two-Lane Collector	2005	1,865	562	-1,303	-69.9	25.0	No	No
3	Pomeroy Rd (north of Tefft St)	Two-Lane Collector	2005	5,910	7,006	1,096	18.5	25.0	Yes	Yes
	Total			**9,395**	**10,179**	**784**	**8.3**	**25.0**	**Yes**	**Yes**
	El Campo Road Corridor									
1	El Campo Road (south of Halcyon Road)	Two-Lane Collector	2005	5,670	4,307	-1,363	-24.0	25.0	Yes	Yes
2	El Campo Road (north of Halcyon Road)	Two-Lane Collector	2004	2,247	1,597	-650	-28.9	25.0	No	Yes
3	El Campo Road (south of US 101)	Two-Lane Collector	2004	1,995	1,639	-356	-17.8	25.0	Yes	Yes
	Total			**9,912**	**7,543**	**-2,369**	**-23.9**	**25.0**	**Yes**	**Yes**
	Halcyon Road Corridor									
1	Halcyon Road (north of Cienaga Road/Highway 1)	Two-lane Collector	2005	8,576	9,572	996	11.6	15.0	Yes	Yes
2	Halcyon Road (south of Cienaga Road)	Two-lane Collector	2005	10,074	11,334	1,260	12.5	15.0	Yes	Yes
3	Halcyon Road (west of El Campo Road)	Two-lane Collector	2004	3,854	4,394	540	14.0	15.0	Yes	Yes
	Total			**22,504**	**25,300**	**2,796**	**12.4**	**15.0**	**Yes**	**Yes**
	Orchard Street Corridor									
1	Orchard St (south of Tefft St)	Two-lane Collector	2005	7,727	6,239	-1,488	-19.3	15.0	No	No
2	Orchard St (south of Southland St)	Two-lane Collector	2004	4,021	5,488	1,467	36.5	15.0	No	No
3	Hutton Rd (north of SR 166)	Two-lane Arterial	2005	6,201	5,335	-866	-14.0	15.0	Yes	Yes
	Total			**17,949**	**17,062**	**-887**	**-4.9**	**15.0**	**Yes**	**Yes**

Notes: Model Forecast is regarded as satisfactory if RMSE target is met or absolute ADT difference is less than 1,000 vehicles per day.

TABLE 6 (CONT'D)
EXISTING CONDITIONS TRAFFIC MODEL – ADT CALIBRATION SUMMARY

#	Roadway Segment	Facility Type	ADT Count Year	Two-Way ADT Count	Model Forecasted ADT	ADT Diff.	Percent Diff.	RMSE Target % (+/-)	RMSE Target Met ?	Model Forecast Satisfatory?
	POINT CALIBRATION AND CORRIDOR CALIBRATION ANALYSIS									
	Other facilties									
1	Camino Caballo (west of Osage St)	Two-lane Collector	2005	5,670	4,998	-672	-11.9	15.0	Yes	Yes
2	Division Street (west of Orchard Avenue)	Two-lane Arterial	2004	5,379	5,170	-209	-3.9	25.0	Yes	Yes
3	Eucalyptus Rd (west of Osage St)	Two-lane Collector	2005	955	1,472	517	54.1	15.0	No	Yes
4	Hetrick Avenue (south of Summit Station Road)	Two-lane Collector	2004	807	542	-265	-32.8	25.0	No	Yes
5	Mary Avenue (north of Tefft Street)[1]	Two-lane Arterial	2004	5,274	6,569	1,295	24.6	25.0	Yes	Yes
6	Mesa Road (west of Tefft Street)	Two-lane Collector	2004	2,178	2,152	-26	-1.2	25.0	Yes	Yes
7	Mesa Rd (west of Osage St)	Two-lane Collector	2005	955	852	-103	-10.8	25.0	Yes	Yes
8	South Frontage Rd (south of Tefft St)	Two-lane Collector	2005	7,290	5,814	-1,476	-20.2	25.0	Yes	Yes
9	Summit Station Road (south of Los Berros Road)	Two-lane Collector	2004	1,384	2,420	1,036	74.9	25.0	No	No
10	SR 166 (east of Thompson Road)	Two-lane Collector	2004	2,900	2,677	-223	-7.7	25.0	Yes	Yes
11	Valley Road (south of Los Berros Road)	Two-lane Collector	2005	6,934	6,181	-753	-10.9	25.0	Yes	Yes
12	Valley Road (north of Los Berros Road)	Two-lane Collector	2005	6,455	6,545	90	1.4	25.0	Yes	Yes
13	Willow Road (east of Highway 1)	Two-lane Arterial	2004	3,948	3,067	-881	-22.3	25.0	Yes	Yes
14	Willow Road (west of Pomeroy Road)	Two-lane Arterial	2005	4,482	4,325	-157	-3.5	25.0	Yes	Yes
	SCREENLINE CALIBRATION ANALYSIS									
	Screenline 1									
1	Halcyon Road (north of Cienaga Road/Highway 1)	Two-lane Collector	2005	8,576	11,334	2,758				
2	Highway 1 (south of Cienaga/Valley intersection)	Two-lane Arterial	2004	4,190	5,526	1,336				
3	Los Berros Rd (east of Valley Rd)	Two-lane Collector	2005	5,490	5,652	162				
4	El Campo Road (south of US 101)	Two-Lane Collector	2004	1,995	1,639	-356				
5	US 101 (north of Los Berros Road interchange)	Four-lane Divided Freeway	2004	56,000	58,418	2,418				
	Screenline Total			**76,251**	**82,569**	**6,318**	**8.3**	**15.0**	**Yes**	**Yes**
	Screenline 2									
1	US 101 (north of SR 166 interchange)	Four-lane Divided Freeway	2004	55,000	56,273	1,273				
2	Thompson Street (north of SR 166)	Two-lane Arterial	2004	3,213	3,823	610				
3	Orchard Street (south of Southland Street)	Two-lane Collector	2004	4,021	5,488	1,467				
	Screenline Total			**62,234**	**65,584**	**3,350**	**5.4**	**15.0**	**Yes**	**Yes**

Notes: Model Forecast is regarded as satisfactory if RMSE target is met or absolute ADT difference is less than 1,000 vehicles per day.

1. Mary Avenue count taken on a non-flea market selling day (Tuesday)

Chapter 4

BUILD-OUT CONDITIONS TRAFFIC MODEL DEVELOPMENT

The creation of a long-term future conditions traffic forecast model for the South County Nipomo planning area involved the following steps.

CREATION OF FUTURE CONDITIONS LAND USE DATABASE

The South County built-out land use database was created by assuming existing uses on currently developed lands and build-out per the County's general plan (provided by San Luis Obispo County) on vacant and/or underdeveloped lands. County staff provided a countywide inventory of parcels that contained San Luis Obispo County Assessor's land development status data. From this database, parcels that were considered "vacant" (San Luis Obispo County Assessor's criteria) were first identified. The currently vacant parcels were segregated into residential and non-residential land use categories based on General Plan zoning designations contained in the County tract map. The South County planning area comprises of approximately 39,500 acres, of which approximately 24,000 acres of lands are considered "vacant" by the San Luis Obispo County Assessor's office. The area currently has 9,600 acres of residential, 100 acres of retail/commercial, 750 acres of industrial, 3,900 acres of general agricultural, 650 acres of specialty agricultural (greenhouse), and 700 acres of public/government land uses.

Future land use projections were based on the San Luis Obispo County General Plan. The build-out of the area per General Plan zoning is projected to result in 16,200 acres of residential, 270 acres of retail commercial, 795 acre industrial, 5,650 acres of general agricultural, 1,700 acres of specialty agricultural (greenhouse), and 830 acre of public/government/recreational use. The development densities for build-out land uses were projected to remain consistent with existing land use density. Residential unit density for future development was projected based on the residential unit densities of existing development nearest vacant residential lands. The build-out of the General Plan is not expected to occur until roughly 2040.
Much of the recent residential development in the South County area, outside of the Community of Nipomo, has been developed as part of "villages". These villages are primarily residential developments oriented around recreational areas (e.g. golf courses) and include some commercial development. Examples of village development include Black Lake and Cypress Ridge. The forthcoming Woodlands development was considered as the sole future residential village development in developing the future conditions model. Including Woodlands and the remaining undeveloped residential parcels in the area, the residential build-out of the South County area is projected to result in 10,374 single-family dwelling units, 1,052 multi-family dwelling units and 1,099 mobile homes. This residential growth projection represents a 4,902 dwelling unit increase.

The build-out land use database, as described above, is summarized in Table 7. Land use for each TAZ was tabulated and included in the Appendix.

TABLE 7
BUILD-OUT LAND USES

		Area 1			Area 2			Total		
Land Use	**Units**	**Existing**	**Added**	**Build-Out**	**Existing**	**Added**	**Build-Out**	**Existing**	**Added**	**Build-Out**
Residential										
Single-Family	DU	4,529	2,375	6,904	1,720	1,750	3,470	6,249	4,125	10,374
Multi-Family	DU	273	710	983	2	67	69	275	777	1,052
Mobile Homes	DU	683	0	683	416	0	416	1,099	0	1,099
Non-Residential										
Hi-generating Retail	KSF	213	1,383	1,596	96	149	245	309	1,532	1,841
Low-generating Retail	KSF	496	346	842	64	55	119	560	401	961
General Office	KSF	31	87	118	0	334	334	31	422	453
Med Office	KSF	21	50	71	21	0	21	42	50	92
Light Industrial	KSF	97	0	97	581	120	702	678	121	799
Heavy Industrial	KSF	95	0	95	959	0	959	1,054	0	1,054
Schools	Acres	96	0	96	11	6	17	107	6	113
Govt/Public	Acres	66	13	79	0	25	25	66	38	104
Churches	Acres	35	0	35	23	0	23	59	0	59
Parks/ Recreational	Acres	268	92	359	181	333	514	449	425	873
Agriculture	Acres	1,320	938	2,258	2,627	422	3,049	3,947	1,360	5,307
Specialty Agriculture (Greenhouse)	Acres	482	618	1,101	179	432	610	661	1,050	1,711
Misc/ Other	Acres	15	35	49	89	1,958	2,047	104	1,992	2,096

YEAR 2025 AS THE FUTURE CONDITIONS' MODEL YEAR

Caltrans and other agencies typically require twenty years or more of design life span for improvements to their transportation facilities. Recognizing these concerns, and based on discussions with County staff, year 2025 was agreed to as the cumulative or long-term future conditions' traffic model forecast year. Year 2025 is also anticipated to be consistent with the long-range forecast year for the upcoming Regional Traffic Model (RTM) being developed by SLOCOG.

The Build-Out traffic model has assumed full build-out of the current General Plan uses within the South County area, superimposed on top of appropriate background traffic growth on the "through" corridors within the Community and its vicinity (e.g. US 101, SR 1, and US 166) and traffic growth to/from other "gateways" to the area. Based on the rate of residential growth in the area, the projected twenty-year growth is 82%. The twenty-year annualized growth rate is 2.8%. The annual increment in housing growth is approximately 250 dwelling units per year. As a point of reference, the County of San Luis Obispo has experienced an annualized growth rate of 1.1% over the past three years. The City of Paso Robles, which has experienced the most rapid growth out of all incorporated areas in the County, has experienced an annual growth rate of 2.8%.

State facilities including US 101, SR 1, and SR 166, within the vicinity of the Community's planning area have experienced approximately 1.4% to 2% compounded annual growth in AADT over the last ten years (1992 through 2002). Based on Caltrans ten-year count data and considering differential rates of growth for communities adjacent to the South County area (e.g. Arroyo Grande and Santa Maria), the twenty-year US 101 background traffic change has been estimated as 44% growth from the south and 32% growth from the north. Growth from local gateways, particularly from the City of Arroyo Grande to the north and the Community of Guadeloupe to the south, was based on California Department of Finance population growth projections. As such, the year 2025 growth from local gateways has been assumed at 44% as a worst case scenario.

The Build-Out land use database (General Plan build-out land uses) was multiplied with the calibrated existing conditions trip generation rates to develop the projected future trip generation. The updated year 2025 gateway trip production-attraction table and "through" (external or X-X) trip table were incorporated into the Build-Out traffic model.

BUILD-OUT MODEL NETWORK

Consistent with the previous South County Circulation Study (last update: 2005), several roadway improvements are projected to be in-place by year 2025 and are listed below:

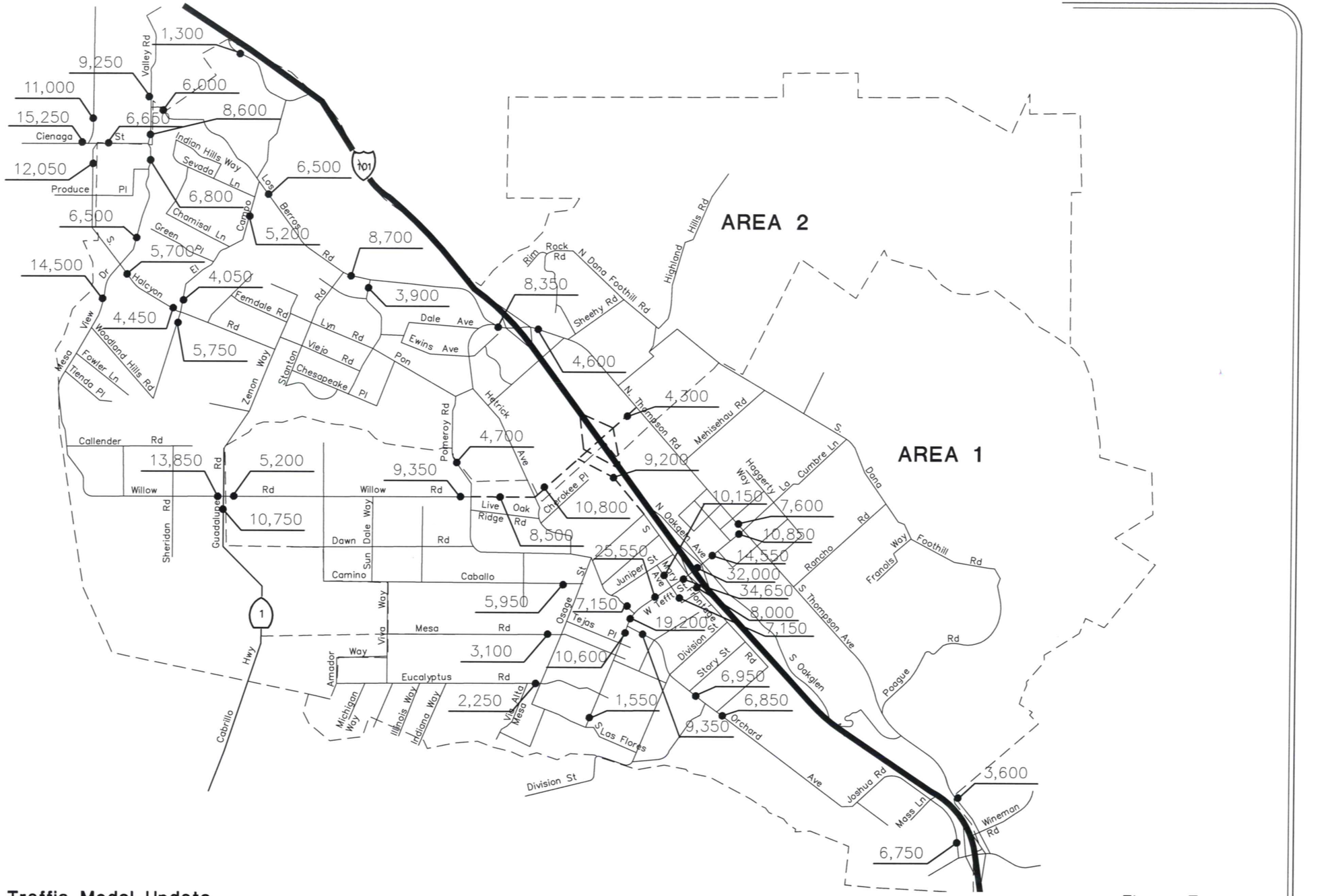
1. Willow Road extension to Thompson Avenue - The Supplemental Environmental Impact Report (SEIR) will be complete by June 2006. The design of the project will be initiated late 2005 and right of way negotiations will begin after the Board approves the SEIR.
2. Willow Road-US 101 interchange construction (see comments for Willow Road extension).
3. Highway 1 connections to Dawn Road, Mesa Road, and Eucalyptus Road resulting from the completed construction of the Woodlands development

The projected Build-Out link volumes are listed in Table 8 and illustrated on Figure 7. Peak hour intersection volumes at study intersections are shown in Figure 8. The Build-Out model land uses and trip volumes generated by TAZ are shown in the Appendix.

Based on the link volumes and roadway characteristics provided by the County, the peak hour Levels-of Service were estimated using Highway Capacity Manual 2000 (HCM-200) methodologies. The daily volume thresholds for roadways are presented in Table 1 and provide a generalized estimate on typical roadway capacities.

Future intersection LOS was estimated using the projected Build-Out traffic volumes (Figure 8) and Highway Capacity Manual 2000 methodologies. Table 2 provides the typical delay thresholds for intersections of varying control types (e.g. signal, two-way stop, all-way stop). Due to the rural nature of the South County Nipomo planning area, an isolated intersection methodology has been employed for a majority of the intersections. The traffic analysis program *Traffix 7.7* (Dowling Associates) was used to implement the HCM-2000 analysis methodologies for isolated intersections. Table 9 shows the estimated intersection LOS under existing intersection controls and the projected Build-Out intersection volumes, as shown in Figure 8.

Following the improvements alternatives analysis in the following section, an additional analysis was performed for the Tefft Street corridor. Due to the urban nature, the close spacing of the intersections and signalized control of the Tefft Street corridor, the *Synchro 7* (Trafficware) software program was used to implement the HCM-2000 analysis methodologies for intersections along Tefft Street. *Synchro 7* takes into account signal coordination, cycle offsets, and queuing when calculating delay and the corresponding LOS.



South County Nipomo Traffic Model Update

Figure 7

Build-Out Average Daily Traffic Volumes

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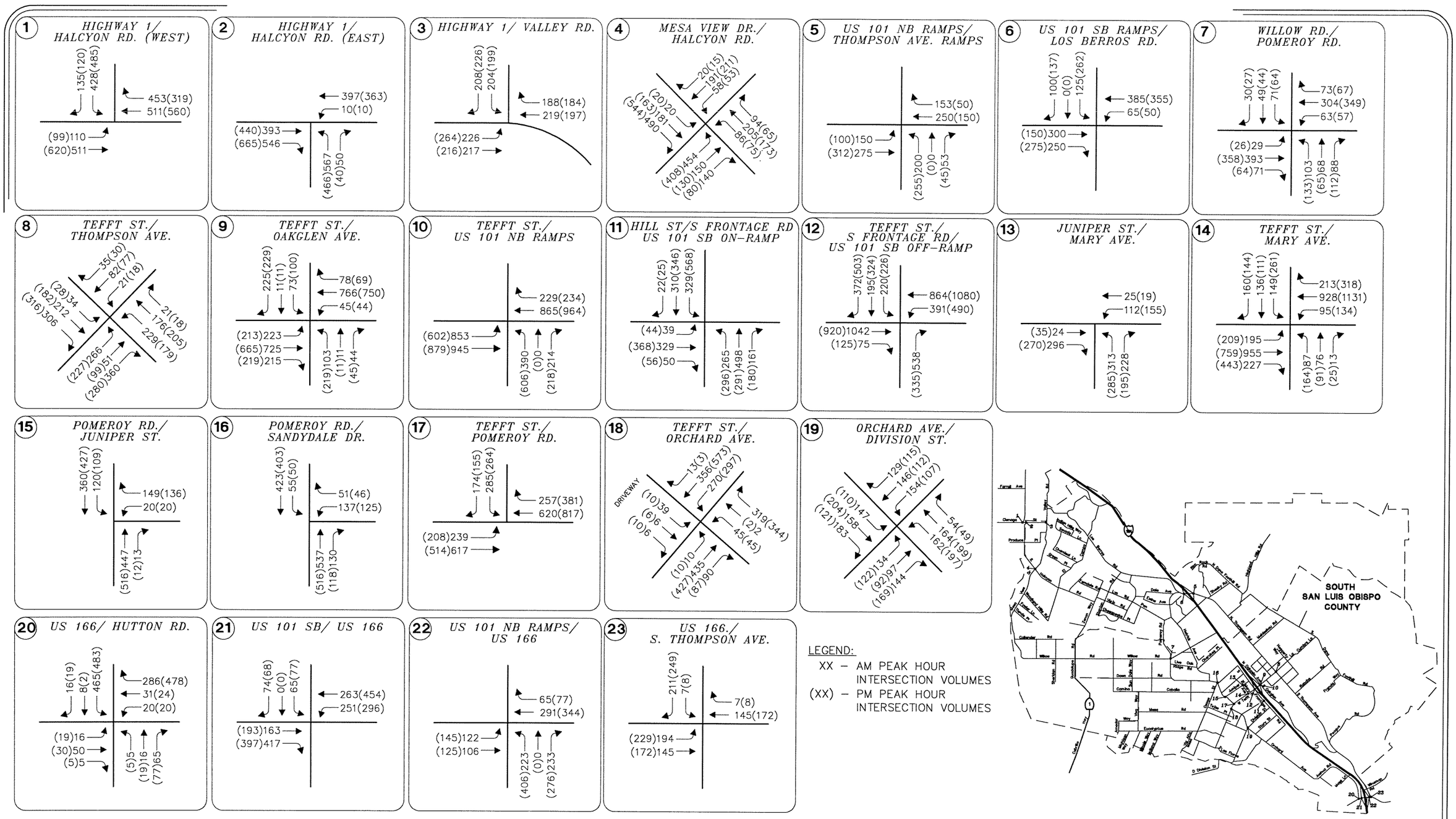


South County Nipomo Model Update

Figure 8

BUILD-OUT PEAK HOUR INTERSECTION TRAFFIC VOLUMES

TABLE 8
BUILD-OUT CONDITIONS: ROADWAY SEGMENT AVERAGE DAILY TRAFFIC LEVELS-OF-SERVICE

Roadway Segment	Facility Type	2025 Forecasted ADT	2025 PM PK HR (10% ADT)[1]	2025 PM PK HR LOS	Recommended Improvements	Expected 2025 LOS
Tefft Street Corridor						
Tefft Street (north of Las Flores Drive)	Two-lane Collector	1,550	160	A		
Tefft Street (south of Orchard Avenue)	Three-lane Arterial (Two lane w\ center turn lane)	10,600	1,060	D	-	-
Tefft Street (west of Pomeroy Road)	Five-Lane Divided Arterial (Four lanes w\ center turn lane)	19,200	1,920	C	-	-
Tefft Street (west of Mary Avenue)	Five-Lane Divided Arterial	32,600	3,260	D	-	-
Tefft Street (west of Frontage Rd)	Five-Lane Divided Arterial	**34,650**	**3,470**	**E**	Intersection improvements	C
Tefft Street (east of Frontage Rd)	Five-Lane Divided Arterial	32,000	3,200	D	-	-
Tefft Street (east of Oakglen Avenue)	Three-lane Arterial	14,550	1,460	D	-	-
Tefft Street (west of Thompson Avenue)	Three-lane Arterial	10,850	1,090	C	-	-
Los Berros Rd Corridor						
Los Berros Rd (east of Valley Rd)	Two-lane Collector	**6,000**	**600**	**D**	Install shoulders and turn pockets	B
Los Berros Rd (east of Stanton Rd)	Two-lane Collector	**8,700**	**870**	**D**	Install shoulders and turn pockets	B
Los Berros Rd (west of US 101)	Two-lane Arterial	**8,350**	**840**	**D**	Install shoulders and turn pockets	B
Thompson Street Corridor						
Thompson Street (south of US 101)	Two-lane Arterial	4,600	460	C	-	-
Thompson Street (north of Tefft Street)	Two-lane Arterial	7,600	760	C	-	-
Thompson Street (north of SR 166)	Two-lane Collector	3,600	360	C	-	-
Pomeroy Rd Corridor						
Pomeroy Rd (south of Los Berros Rd)	Two-Lane Collector	3,900	390	B	-	-
Pomeroy Rd (north of Willow Rd)	Two-Lane Collector	4,700	470	C	-	-
Pomeroy Rd (north of Tefft Street)	Two-lane Arterial	7,150	720	D	-	-

Note: 1. 10% peak daily factor derived from average peak hour volume-daily volume ratio (2004 and 2005 counts).
2. Highway Capacity Manual 2000 methodology for 2-lane highways, arterial capacities adjusted based on observed characteristics of each roadway

TABLE 8 (CONT'D)
BUILD-OUT CONDITIONS: ROADWAY SEGMENT AVERAGE DAILY TRAFFIC LEVELS-OF-SERVICE

Roadway Segment	Facility Type	2025 Forecasted ADT	2025 PM PK HR (10% ADT)1	2025 PM PK HR LOS	Recommended Improvements	Expected 2025 LOS
El Campo Rd Corridor						
El Campo Rd (south of Halcyon Rd)	Two-Lane Collector	**5,750**	**580**	**D**	Install shoulders	C
El Campo Rd (north of Halcyon Rd)	Two-Lane Collector	4,050	410	C	-	-
El Campo Rd (south of US 101)	Two-Lane Collector	5,200	520	B	-	-
Halcyon Rd Corridor						
Halcyon Rd (north of Cienaga Rd/Hwy 1)	Two-lane Collector	1,100	110	C	-	-
Halcyon Rd (south of Cienaga Rd)	Two-lane Collector	**12,050**	**1,210**	**F**	Realign horizontal curves and construc	C
Halcyon Rd (west of El Campo Rd)	Two-lane Collector	4,450	450	C	-	-
Halcyon Rd (east of Aloma Way)	Two-lane Arterial	600	60	A	-	-
Orchard Avenue Corridor						
Orchard Avenue (south of Tefft Street)	Two-lane Collector	9,350	940	C	-	-
Orchard Avenue (south of Division Street)	(Two lanes w\ center	6,300	630	C	-	-
Orchard Avenue (south of Story Street)	Three-lane Collector	6,950	700	C	-	-
Orchard Avenue (south of Southland Street)	Two-lane Collector	6,850	690	C	-	-
Hutton Road (north of SR 166)	Two-lane Collector	**6,550**	**660**	**D**	Install shoulders	C
Other facilties						
Division Street (west of Orchard Avenue)	Two-lane Arterial	8,000	800	C	-	-
Frontage Rd (south of Tefft Street)	Two-lane Collector	**8,050**	810	D	-	-
Frontage Rd (north of Sandydale Drive)	Two-lane Collector	9,200	920	B	-	-
Hetrick Avenue (south of Summit Station Rd)	Two-lane Collector	520	50	A	-	-
Mary Avenue (north of Tefft Street)	Two-lane Arterial	10,150	1,020	C	-	-
Mary Avenue (south of Tefft Street)	Two-lane Arterial	7,150	820	C	-	-
Mesa Rd (west of Tefft Street)	Two-lane Collector	3,100	310	C	-	-
Summit Station Rd (south of Los Berros Rd)	Two-lane Collector	350	40	B	-	-
Highway 1 (west of Willow Road)	Two-lane Arterial	**13,850**	**1,390**	**E**	Add left-turn lane and shoulders	C
Willow Rd (east of Highway 1)	Two-lane Arterial	5,200	520	C	-	-
Willow Rd (west of Pomeroy Rd)	Two-lane Arterial	9,350	940	D	-	-
Willow Rd (west of US 101)	Two-lane Arterial	9,200	920	C		
Willow Rd (east of US 101)	Two-lane Arterial	4,300	430	C		

Note: 1. 10% peak daily factor derived from average peak hour volume-daily volume ratio (2004 and 2005 counts).
2. Highway Capacity Manual 2000 methodology for 2-lane highways, arterial capacities adjusted based on observed characteristics of each roadway

TABLE 9
BUILD-OUT CONDITIONS: PEAK HOUR INTERSECTION LEVELS-OF-SERVICE

#	Intersection	Control Type	AM Peak Hour Delay	AM Peak Hour LOS	AM Peak Hour Warrant Met?	PM Peak Hour Delay	PM Peak Hour LOS	PM Peak Hour Warrant Met?	Recommended Improvements	Expected 2025 LOS
1	**Highway 1/Halcyon Road (west)**	**AWSC**	**OVR**	**F**	**Yes**	**OVR**	**F**	**Yes**	Realign intersection and signalize	C
2	**Highway 1/Halcyon Road (east)**	**AWSC**	**OVR**	**F**	**Yes**	**OVR**	**F**	**Yes**	Realign intersection and signalize	C
3	**Highway 1/Valley Road**	**TWSC**	**OVR**	**F**	**Yes**	**OVR**	**F**	**Yes**	Realign horizontal curves and signalize	B
4	Mesa View Drive/Halcyon Road	Signal	29.7	C	-	26.1	C	-	-	-
5	**US 101 NB Ramps/Thompson Avenue**	**TWSC**	**OVR**	**F**	**Yes**	**80.9**	**F**	**Yes**	Signalize intersection	B
6	**US 101 SB Ramps/Los Berros Road**	**TWSC**	**59.8**	**F**	**Yes**	**OVR**	**F**	**Yes**	Signalize intersection	B
7	**Willow Road/Pomeroy Road**	**TWSC**	**OVR**	**F**	**-**	**57.0**	**F**	**-**	Construct Willow Rd extension to new interchange (westbound approach) and signalize intersection	C
8	Tefft Street/Thompson Avenue	Signal	32.9	C	-	30.3	C	-	-	-
9	**Tefft Street/Oakglen Avenue**	**Signal**	**70.3**	**E**	**-**	**OVR**	**F**	**-**	Intersection widening	C
10	**US 101 NB Ramps/Tefft Street**	**Signal**	**OVR**	**F**	**-**	**OVR**	**F**	**-**	Widen to dual eastbound left-turn lanes	C
12	**US 101 SB Off-Ramp/South Frontage Road/Tefft Street**[1]	**Signal**	**OVR**	**F**	**-**	**OVR**	**F**	**-**	Move SB on-ramp and construct Mary St. extension	C
13	**Juniper Street/Mary Avenue**	**TWSC**	**OVR**	**F**	**Yes**	**OVR**	**F**	**Yes**	Widen intersection and signalize	C
14	**Tefft Street/Mary Avenue**	**Signal**	32.8	C	-	**OVR**	**F**	-	*Assumes Mary Street extension*, signalize and widen	D
15	Pomeroy Road/Juniper Street	TWSC	20.2	B	No	23.2	C	No	-	-
16	**Pomeroy Road/Sandydale Drive**	**TWSC**	**OVR**	**F**	**Yes**	**95.5**	**F**	**Yes**	Improve parallel facilities (Hetrick Ave.)	C
17	Tefft Street/Pomeroy Road	Signal	27.3	C	-	28.1	C	-	-	-
18	Tefft Street/Orchard Avenue	Signal	34.1	C	-	35.0	D	-	-	-
19	Orchard Avenue/Division Street	Signal	30.0	C	-	28.2	C	-	-	-
20	**US 166/Hutton Road**	**TWSC**	**25.5**	**D**	No	**53.5**	**F**	**Yes**	Construct roundabout	B
21	**US 101 SB Ramps/US 166**	**TWSC**	**60.2**	**F**	**Yes**	**OVR**	**F**	**Yes**	Construct roundabout	B
22	**US 101 NB Ramps/US 166**	**TWSC**	**30.0**	**D**	**Yes**	**OVR**	**F**	**Yes**	Construct roundabout	B
23	US 166/South Thompson Avenue	TWSC	11.3	B	No	12.5	B	No	-	-

Legend: TWSC = Two-Way-Stop Control. AWSC = All-Way-Stop Control. OVR – Over Capacity
Warrant = Caltrans Peak hour-Volume based Signal Warrant-11 (Urban Areas) – for freeway ramp intersections
Warrant = MUTCD Peak hour-Volume based Signal Warrant-11 (Urban Areas) – for all other intersections
Bolded Intersection, Delays, and LOS indicate intersections operating at deficient LOS "D" or worse for intersections within County right-of way, and LOS "E" and "F" for intersections within Caltrans right of way.

1. *Intersection 11 (US 101 SB on-ramp/Tefft Street) forms the fifth leg of Intersection 12. The improved intersection operations with a realigned US 101 SB on-ramp at Hill Street is analyzed in the subsequent Tefft Street corridor Synchro analysis.*

As shown in Table 8, several roadway segments within the South County Nipomo planning area are projected to operate at deficient LOS "D" or worse, for rural roadways, and LOS "E" or worse, for urban roadways, during the projected build-out conditions. In particular are the segments of Tefft Street, between Tejas Place and Oakglen Avenue; the Los Berros Road corridor; the segments of Halcyon Road, near the Highway 1 intersection; and the Orchard Avenue corridor. Roadway improvement alternatives are evaluated in the following section.

Shown in Table 9, intersections at the Highway 1/Halcyon Road junction, at the US 101/Los Berros Road/Thompson Road interchange, along the Tefft Street corridor, at Juniper Street/Mary Avenue, at Pomeroy Road/Sandydale Drive, at US 166/Hutton Road, and at the US 101/US 166 interchange are projected to result in deficient LOS "D" or worse under build-out conditions. Intersection improvement alternatives are evaluated in a subsequent section.

CIRCULATION ISSUES OF CONCERN

The following are summaries of circulations issues of concern predicted by the South County Nipomo Traffic Model for Build-Out cumulative condition. Utilizing average daily traffic (ADT) predictions produced by the model, the peak hour-based Levels of Service for each roadway segment were calculated according to the methodology described in Chapter 2. Consistent with San Luis Obispo County and Caltrans policies, LOS "C" was taken as the general threshold for acceptable/tolerable operations for rural areas and LOS "D" taken as the general threshold for urban areas. Roadway segments with projected LOS worse than the identified thresholds were determined as "deficient". Implications on community traffic conditions and safety are also described in this section, along with possible effects resulting from approved/planned capital improvement projects listed in the South County Nipomo Capital Improvement Program project inventory.

Roadway Segments

Tefft Street Corridor

a. *Between Mary Avenue and Oakglen Avenue* – This segment of Tefft Street, which passes through the US 101 interchange and the primary commercial corridor of the Community of Nipomo, is projected to operate at deficient LOS "E" or worse during build-out conditions. The roadway is configured as a five lane arterial and has adequate capacity to provide acceptable operations based on roadway segment traffic volumes alone. However, the LOS along Tefft Street through the interchange is constrained by the close intersection spacing and the limited capacity of the US 101 interchange bridge. The recommended circulation improvement in response to the projected deficient LOS is to perform capacity improvements at the intersections along this roadway segment. The intersection improvements are discussed in the following section.
b. *Between Oakglen Avenue and Thompson Avenue* – As detailed in the 2004 South County Circulation Study Update, the County Board of Supervisors adopted the "Olde Town Nipomo Design and Circulation Plan", which calls for a three-lane arterial configuration with on-street angled parking and additional features conducive to a pedestrian environment (e.g. bulb-outs). The volume of traffic along this roadway segment is projected to result in LOS "D" with the planned three-lane configuration. While roadway capacity may decrease to LOS "E" due to the on-street angled parking and pedestrian features, the Level-of-Service may still remain at LOS "D" due to the presence of a five-foot buffer between the edge of the travel lane and the end of the parking stall. This buffer would allow for through traffic movement while vehicles are parking and decrease the risk of collisions.

Los Berros Corridor – Los Berros Road is configured as a two-lane collector/arterial. Under build-out conditions, the corridor would serve as a major arterial roadway for the northern portion of the South County

area. The increase in traffic is projected to result in LOS "D", which is below the County rural standard of LOS "C". The recommended circulation improvements are to install standard eight-foot shoulders along Los Berros Road where shoulders do not currently exist and to install left-turn pockets at intersections with Century Lane, Stanton Road, and Pomeroy Road. Turn pockets are scheduled for construction at Stanton Road and Pomeroy Road during the summer of 2006.

El Campo Road (between Los Berros Road and Halcyon Road) – This segment of El Campo Road is projected under build-out conditions to serve as a major collector route between Los Berros Road and residential development near Halcyon Road, east of Highway 1. Although the El Campo Road configuration as a two-lane collector provides adequate capacity to handle the traffic through build-out conditions, roadway segment capacity is reduced due to the lack of shoulders, resulting in rural-standard deficient LOS "D". To result in LOS "C" or better under build-out conditions, the recommended circulation improvement is to construct standard eight-foot shoulders. An additional analysis was performed, and is summarized in the following section, to study the effects of extending El Campo Road to Highway 1.

Halcyon Road Corridor – Halcyon Road, between its two intersections with Highway 1, is projected to handle nearly approximately 14,000 vehicles per day, with operations at equivalent LOS "F". The capacity of Halcyon Road is constrained by the roadway grade, a lack of shoulders, and the staggered intersection configuration at the Highway 1/Halcyon Road northern intersection. Per the 2004 South County Circulation Study Update, a completed Project Study Report (PSR) recommends the following phased improvements:

- Phase 1 – Realign the staggered Halcyon Road approaches at the Highway 1 intersection to form a standard four-legged intersection and add shoulders to the roadway between Highway 1 and the grade.
- Phase 2 – Realign the horizontal curves on Highway 1 from Valley Road to Halcyon Road.
- Phase 3 – Realign the horizontal curve and provide left-turn channelization on the Valley Road/Highway 1 intersection.

Beyond the roadway widening to accommodate shoulders, a truck climbing lane is also recommended. The improvements should result in the corridor being improved to arterial standards.

Per the County's request, additional analyses were performed to determine the feasibility and effectiveness of constructing an US 101/El Campo Road interchange as a way to divert traffic from Halcyon Road. A summary of the analysis is included in a subsequent section. The main conclusion of the analysis is that an El Campo Road interchange will divert approximately 2,500 daily trips from Halcyon Road. The projected diversion onto the El Campo Road interchange may be less than expected due to heavy residential-commercial interaction between the South County area and the City of Arroyo Grande. Recognizing that the Halcyon Road improvements are warranted under existing conditions, however, this diversion is not substantial enough to alleviate future traffic conditions to acceptable LOS. It is therefore recommended that the currently planned improvements to widen Halcyon Road continue to be pursued by the County instead of the El Campo Road interchange.

Orchard Avenue Corridor (Hutton Road, north of SR 166) – Additional commercial and industrial development is projected to result in rural-standard deficient LOS "D" under build-out conditions. Hutton Road, which is configured as a two-lane collector/arterial, has a roadway capacity reduced from typical capacity due a lack of standard-width shoulders. The recommended circulation improvement is to construct eight-foot shoulders.

Frontage Road (south of Tefft Street) – The projected traffic volumes along South Frontage Road results in LOS on the cusp of urban-standard acceptable LOS "D" and unacceptable LOS "E". The close intersection spacing between the US 101 ramps and the Tefft Street/Frontage Road intersection constrains the traffic capacity of the roadway. The recommended circulation improvements are presented in the Tefft Street

interchange alternatives analysis, included in the following section.

Willow Road/Highway 1 (west of Highway 1/Guadelupe Road) – Build-out conditions are projected to result in approximately 14,000 daily trips along Willow Road, west of Highway 1. Willow Road currently serves as a major arterial through the western portion of the South County area and its importance would certainly increase as the Willow Road interchange is constructed. The recommended circulation improvement is to widen the roadway from a two-lane arterial to a three-lane arterial by adding a continuous left-turn lane and add six-foot shoulders.

Intersections

Highway 1/Halcyon Road (east/west) – The Halcyon Road intersections at Highway 1 are projected to operate at deficient LOS "F" under build-out conditions. Improvements for these intersections, which are configured in a non-standard staggered alignment, are contained in the PSR for Halcyon Road improvements. The Project Approval & Environmental Document portion of this work is to be completed late 2005. Construction Funding will be from a combination of Area 2 Road Impact Fees and STIP funds. The improvements, listed in the previous section under the discussion for the segment of Halcyon Road south of Highway 1, entail the realignment of the Halcyon Road approaches to form a standard four-legged intersection. As such, configuring all intersection approaches with one left-turn and one through-right turn lane and intersection signalization are required to provide acceptable LOS for the projected traffic volumes.

Highway 1/Valley Road – This intersection is projected to operate at deficient LOS "F" under build-out conditions. Per the 2004 South County Circulation Study Update, a completed Project Study Report (PSR) recommends that the horizontal curves on Highway 1 from Valley Road to Halcyon Road be realigned as part of the Halcyon Road/Highway 1 phased improvements.

Moreover, the recommended improvement at this intersection, beyond realigning the horizontal curve from the northwest-bound approach, is to widen the eastbound and southbound approaches to accommodate additional turn lanes. The intersection would operated on a temporary basis under All-Way-Stop-Control and would convert to signalized control to remain consistent with the signalized control at the Halcyon Road/Highway 1 intersection, when the Halcyon Road/ Highway 1 intersection is realigned and improved.

US 101 Southbound Ramps/Los Berros Road – This intersection is projected to operate at deficient LOS "F" under build-out conditions during the PM peak hour. The volumes are not projected to satisfy peak hour warrants for a traffic signal. The recommended intersection improvement is converting the intersection to All-Way-Stop-Control. The Thompson Road/US 101 Northbound Road intersection would also need to be converted to AWSC to preserve interchange control consistency.

Juniper Street/Mary Avenue – This intersection is projected to operate at deficient LOS "E" under build-out conditions. Extensive commercial development near this intersection is anticipated under the South County General Plan. The recommended intersection improvement is signalization and widening the northbound and westbound approaches to allow for an additional left-turn lane.

Pomeroy Road/Sandydale Drive – This intersection is projected to operate at deficient LOS "F" under build-out conditions, particularly due to greater development along the Willow Road corridor and the construction of the Willow Road/US 101 interchange. The recommended improvement at this intersection is to improve Hetrick Avenue, a parallel facility, such that traffic demand along Pomeroy Road is reduced.

SR 166/US 101 Interchange – The SR 166/US 101 interchange is currently used as an alternative access point to US 101 south from the portion of the South County area west of the freeway. The projected future traffic volumes show that this route will continue to provide vital access to US 101 south interchange, such that traffic volume growth results in LOS "F" at the ramp intersections. Additional development near Cuyama Lane and the raceway would likely further increase traffic demand and congestion. Based on the projected traffic volumes, the appropriate improvements are roundabouts at both ramp intersections. These roundabouts are recommended so that the closely spaced frontage roads of Hutton Road on the west side and Thompson Avenue on the east can be incorporated into a single intersection. For the west side roundabout, a large drainage facility will need to addresses in its design and eventual construction.

US 166/Hutton Road – Hutton Road is currently used to access US 101 as an alternative from the congested Tefft Street/US 101 interchange. As stated in the SR 166/US 101 interchange improvement discussion, the projected future traffic volumes show that this route will continue to be utilized as a major access to US 101 south, such that traffic volume growth results in LOS "F" at the intersection. Additional development near Cuyama Lane and the raceway would likely further increase traffic demand and congestion. The proposed roundabout improvement to the SR 166/US 101 interchange will mitigate the projected traffic impacts at the intersection as well.

Tefft Street Interchange Synchro Analysis: With Interchange Improvements

As detailed in the previous section, the *Synchro 7* (Trafficware) software program was used to implement the HCM-2000 analysis methodologies for intersections along Tefft Street due to the close spacing of the intersections and their signalized control. *Synchro 7* takes into account signal coordination, cycle offsets, and queuing when calculating delay and the corresponding LOS. Improvements to the Tefft Street interchange were analyzed, incorporating various improvement alternatives, and are described below. The resulting LOS and delays, as produced by the Synchro analysis, are presented in Table 10.

Tefft Street/Oakglen Avenue – Remaining consistent with the "Olde Town Nipomo Design and Circulation Plan", which calls for a three-lane cross-section on Tefft Street east of Oakglen Avenue, the recommended intersection geometrics are as follows:

- Northbound/southbound Oakglen Avenue – one left-turn lane, one through-right turn lane.
- Eastbound Tefft Street – One left-turn lane, one through lane, one right turn lane
- Westbound Tefft Street – One left-turn lane, one through lane, one through-right turn lane.

The listed intersection geometrics will result in urban-standard acceptable LOS "C".

Tefft Street/US 101 northbound ramps – This intersection is projected to operate at deficient LOS "E" under build-out conditions. The most constrained movement at this intersection is the eastbound left-turn onto the US 101 on-ramp. The recommended intersection improvement is to widen the eastbound and northbound approaches to accommodate an additional left-turn lane for each approach. Urban-standard acceptable LOS "C", on the cusp of LOS "C/D", is projected with these improvements.

Tefft Street/US 101 southbound ramps/South Frontage – Under build-out conditions, LOS "E" or worse is projected at the two intersections with the US 101 southbound ramps. The deficient LOS at these intersections are attributed to their close spacing with one another. South Frontage Road essentially forms the fifth leg of the Tefft Street/US 101 southbound ramp intersection.

Within the 2004 South County Circulation Study Update, several alternatives for realigning the ramps were evaluated. The preferred alternative, Alternative 5, was evaluated using the updated build-out model. The circulation improvements involve relocating the US 101 southbound ramp from its current intersection at Tefft Street farther south, such that it forms an intersection with Hill Street and South Frontage Road. Mary Avenue would be extended southerly to Hill Street. The South Frontage Road/Tefft Street/US 101 off-ramp

would then be configured as a standard four-legged intersection with a traffic signal. The new US 101 on-ramp intersection would be configured with single-lane approaches in the northbound and eastbound directions, and a left-turn lane and through-lane in the southbound direction. According the preliminary plans submitted to the County, the follow intersections would be reconstructed with the following intersection geometrics:

Tefft Street/ Mary Avenue extension –

- Northbound Mary Avenue – one lane each for the left-turn, through, and right-turn movements
- Southbound Mary Avenue – one left-turn lane, one through-right turn lane
- Eastbound Tefft Street – one left-turn lane, two through-lanes, one right-turn lane
- Westbound Tefft Street – one left-turn lane, one through-lane, one through-right turn lane

Tefft Street/US 101 SB off-ramp/S. Frontage Road –

- Northbound S. Frontage Road – one right-turn lane
- Southbound US 101 SB off-ramp – one left-through lane, one right-turn lane
- Eastbound Tefft Street – two through-lanes, one right-turn lane
- Westbound Tefft Street – two left-turn lanes, two through-lanes

South Frontage Road/Hill Street/US 101 SB on-ramp –

- Northbound S. Frontage Road – one lane each for the left-turn, through, and right-turn movements
- Southbound S. Frontage Road – one left-turn lane, one through-right turn lane
- Eastbound Hill Street – one left-through lane, one right-turn lane

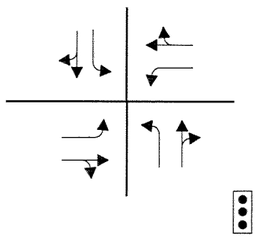
The summary of Tefft Street corridor intersection LOS, as estimated by the Tefft Street Synchro Analysis for the improved intersections with geometrics as listed above, is shown in Table 10.

TABLE 10
BUILD-OUT CONDITIONS, IMPROVED TEFFT STREET CORRIDOR:
SYNCHRO ANALYSIS PEAK HOUR INTERSECTION LEVELS-OF-SERVICE

			AM Peak Hour			PM Peak Hour		
#	Intersection	Control Type	Delay	LOS	Warrant Met?	Delay	LOS	Warrant Met?
9	Tefft Street/Oakglen Avenue	Signal	24.4	B	-	28.4	C	-
10	US 101 NB Ramps/Tefft Street	Signal	19.8	C	-	24.6	C	-
11	US 101 SB Off-Ramp/South Frontage Road/Tefft Street	Signal	38.1	D	-	25.6	C	-
12	US 101 SB On-Ramp/South Frontage Road/Hill Street	Signal	30.6	C	-	39.2	D	-
14	Tefft Street/Mary Avenue	Signal	29.5	C	-	52.1	D	-

Intersection improvements are illustrated on Figure 9.

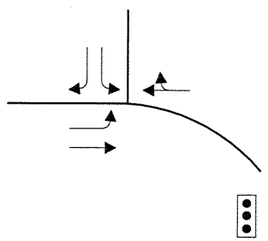
1 HIGHWAY 1/ HALCYON RD.



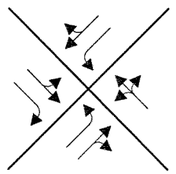
2 HIGHWAY 1/ HALCYON RD. (EAST)

INTERSECTION REALIGNED WITH INTERSECTION 1

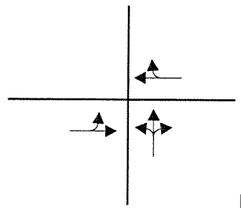
3 HIGHWAY 1/ VALLEY RD.



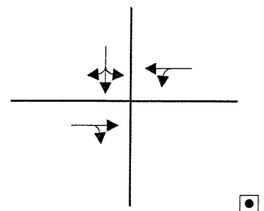
4 MESA VIEW DR./ HALCYON RD.



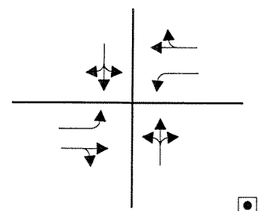
5 US 101 NB RAMPS/ THOMPSON AVE. RAMPS



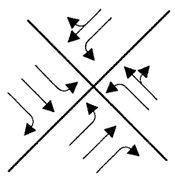
6 US 101 SB RAMPS/ LOS BERROS RD.



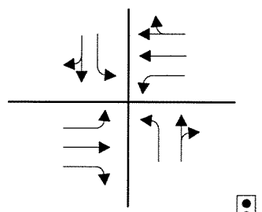
7 WILLOW RD./ POMEROY RD.



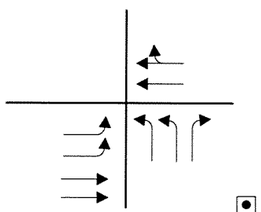
8 TEFFT ST./ THOMPSON AVE.



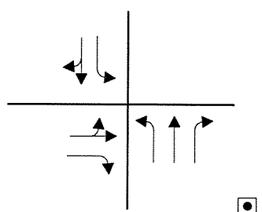
9 TEFFT ST./ OAKGLEN AVE.



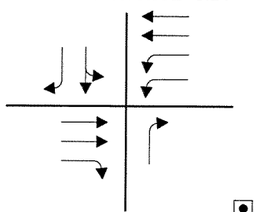
10 TEFFT ST./ US 101 NB RAMPS



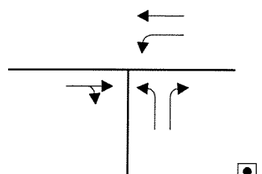
11 US 101 SB ON-RAMP/ S. FRONTAGE RD./HILL ST.



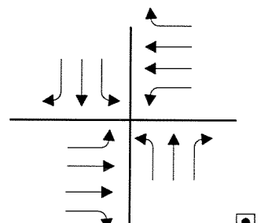
12 TEFFT ST./ US 101 SB OFF-RAMP/ S. FRONTAGE RD.



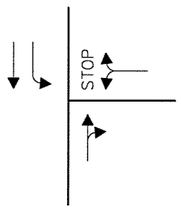
13 JUNIPER ST./ MARY AVE.



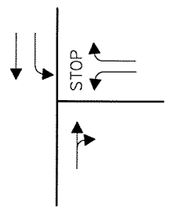
14 TEFFT ST./ MARY AVE.



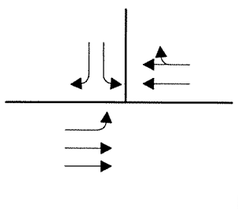
15 POMEROY RD./ JUNIPER ST.



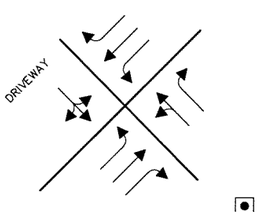
16 POMEROY RD./ SANDYDALE DR.



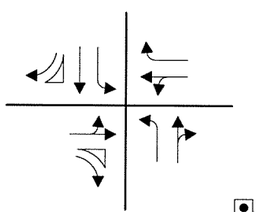
17 TEFFT ST./ POMEROY RD.



18 TEFFT ST./ ORCHARD AVE.



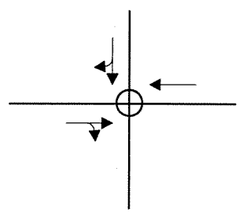
19 ORCHARD AVE./ DIVISION ST.



20 US 166/ HUTTON RD.

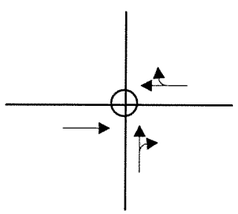
INTERSECTION REALIGNED WITH INTERSECTION 21

21 US 101 SB/ US 166



ROUNDABOUT

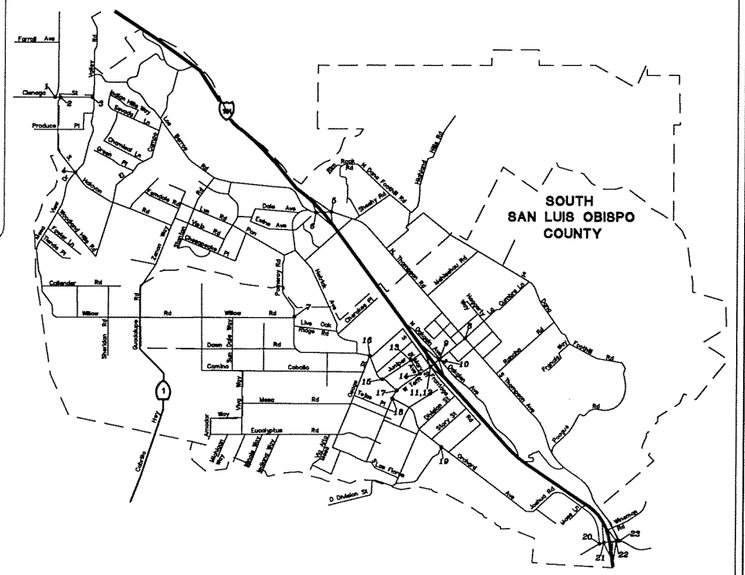
22 US 101 NB RAMPS/ US 166



ROUNDABOUT

23 US 166./ S. THOMPSON AVE.

INTERSECTION REALIGNED WITH INTERSECTION 22



South County Nipomo Model Update

Figure 9

BUILD-OUT RECOMMENDED INTERSECTION GEOMETRICS AND CONTROL

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Chapter 5

TRAFFIC NETWORK ALTERNATIVES EVALUATION

This section presents the results of several supplemental analyses on traffic network alternatives considered for construction. The analyses' intent is to use the South County-Nipomo Traffic Model to test the alternatives and determine the overall circulation benefits of the potential improvements.

EXISTING NETWORK

The effectiveness of traffic improvements were evaluated against a Build-Out "base" traffic scenario that had no traffic improvements. The Build-Out "base" scenario for the alternatives evaluation was a model network that superimposed the build-out land uses onto the existing traffic network. Consistent with the General Plan, a large amount of development was modeled in the Nipomo, southwest of US 101, and in the Woodlands village development. As expected, all existing capacity problems are exacerbated at build-out, particularly along the major arterials within the South County Nipomo area, e.g. Tefft Street, Willow Road, Halcyon Road, Thompson Avenue, and Los Berros Road.

Interchange access to US 101 and east-west access across the freeway were projected as heavily constrained. Tefft Street was particularly constrained due to high demand from US 101 south traffic. US 101 north traffic access was also constrained at the El Campo Road at-grade highway access and at roadways leading to the Halcyon Road interchange access within the City of Arroyo Grande. The alternatives evaluation scenarios consider additional freeway interchange access at Southland and Willow, and improved access at El Campo and Tefft (SB).

NORTH FRONTAGE ROAD – WILLOW ROAD – US 101 INTERCHANGE PHASED IMPROVEMENTS

The Willow Road/US 101 interchange is a planned project and was considered as part of the Build-Out base network. However, because the construction of the new interchange and corresponding new connections is expected to occur over several years, it is necessary to determine the benefits of various intermediate improvements that are expected to occur prior to full interchange construction. The analysis of the alternatives listed below provides an additional assessment of possible interim improvements before the actual construction of the Willow Road interchange. Each alternative was analyzed using the build-out model. The effect of each alternative on traffic volumes along constrained roadways and the changes in traffic distribution are qualitatively discussed below. The model output figures for each alternative are included in the Appendix. Phased improvement figures shown in Figure 10.

1. Extend Willow Road to intersect with Hetrick Avenue/Summit Station Road and North Frontage Road. This improvement alternative studies the effect of extending Willow Road from its current terminus at Pomeroy Road to the North Frontage Road extension. The new Willow Road extension, working with the North Frontage Road extension, is projected by the model to handle approximately 6,600 daily trips.

   Two conclusions can be made from the modeled traffic volumes along these two roadway extensions. First, this alternative reduces traffic along Pomeroy Road south by providing a more direct route to Tefft Street, via Frontage Road and Mary Avenue, and the US 101 interchange. Secondly, this alternative reduces traffic along Pomeroy Road north by providing an additional east-west connection over US 101. Even with the reduction in traffic volumes along Pomeroy, however, this improvement alternative is not projected to alleviate the additional traffic impacts resulting from additional development along the Tefft Street corridor without additional freeway interchange access.

2. Extend Willow Road from Pomeroy Road to Thompson Road. Construct a new interchange at US 101 (Willow Road interchange). This network modeled Willow Road extending from its existing terminus at Pomeroy Road to a new terminus at Thompson Avenue. A full-access interchange at Willow Road/US 101 was modeled. The model results for this analysis were presented in the previous section as part of the Build-Out base network output.

   The Willow Road extension, west of US 101, is projected to handle 11,500 ADT, while the segment east of US 101 is projected to have an ADT of 4,500. The freeway on- and off-ramps were modeled as having a greater effect on US 101 north freeway traffic. The model projected a daily trip volume ranging between 8,000 to 9,000 projected to access the new interchange, either entering onto US 101 northbound or exiting off US 101 southbound at the interchange.

3. Extend North Frontage Road to Los Berros Road. Connect Live Oak Ridge Road to Hetrick Avenue/Summit Station Road and North Frontage Road. This alternative is similar to Alternative 1, except that the connection from Pomeroy Road to the North Frontage Road extension is attained from Live Oak Ridge Road rather than from the Willow Road extension. The model projects a substantially lower volume of traffic expected to utilize the Willow Road extension to the North Frontage Road extension via Live Oak Ridge Road when compared to Alternative 1 (Alternative 3 – 3,400 trips vs. Alternative 1 – 6,700 trips). The Live Oak Ridge Road extension to North Frontage Road is most likely less effective at reassigning traffic to the Los Berros Road interchange because it does not provide a direction connection from Willow Road, the major east-west arterial facility through the western portion of the South County area.

South County Nipomo Traffic Model Update

Figure 10

Willow Road - US 101 Interchange Phased Improvements

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TEFFT STREET CORRIDOR – MARY STREET EXTENSION PHASED IMPROVEMENTS

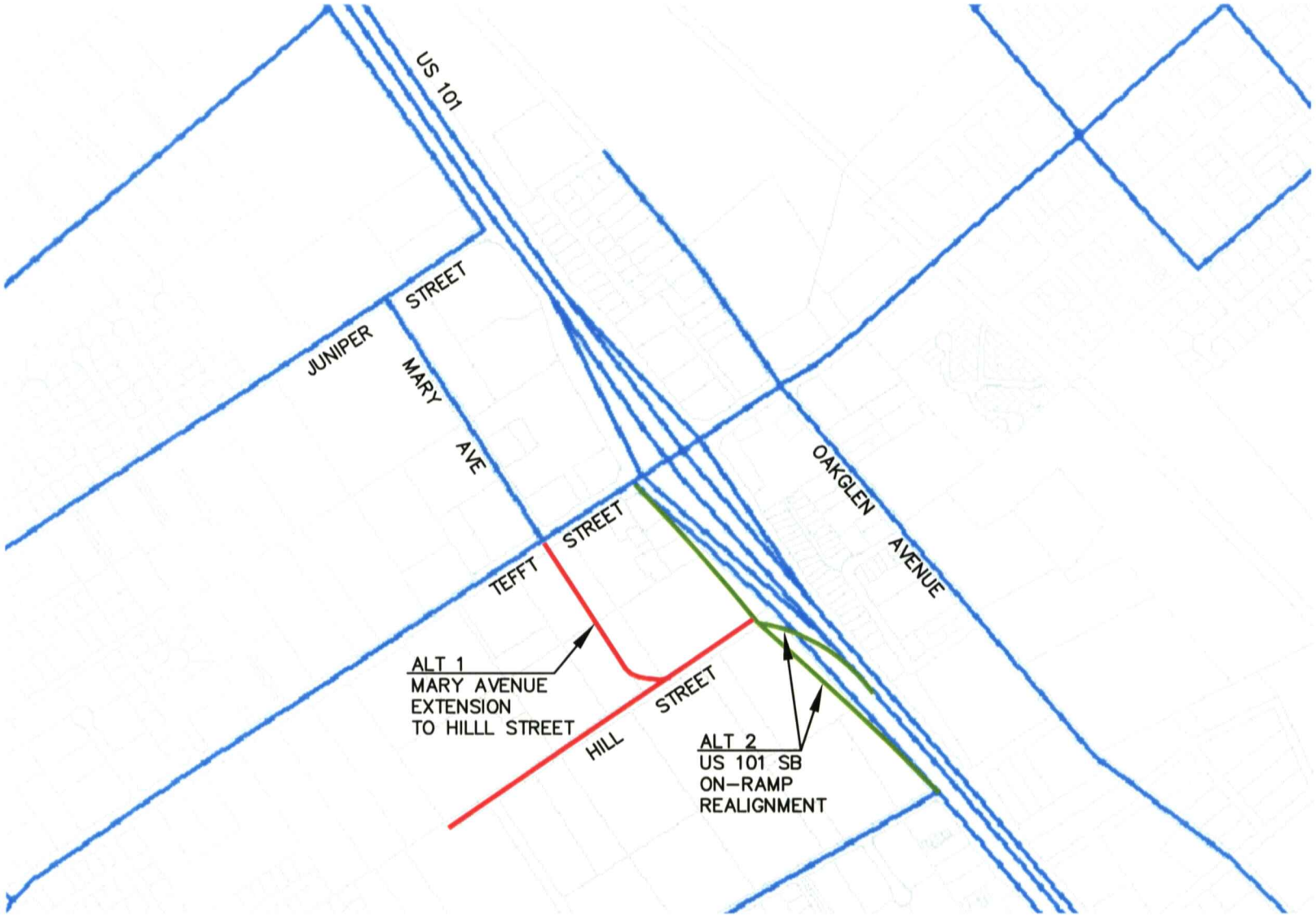
The Tefft Street/US 101 southbound ramps are configured such that the on-ramp forms a T-intersection in close proximity to the US 101 southbound off-ramp/Tefft Street/S. Frontage Road intersection. Tefft Street also serves as the primary commercial corridor and is the central US 101 crossing for the community. During peak hour periods, the interchange is severely constrained and extensive queuing occurs through several intersections. The following alternatives are phases of the ultimate planned improvement for the US 101 southbound on-ramp at this intersection, which is to extend Mary Avenue to Hill Street and to construct a new US 101 southbound on-ramp at the Hill Street/S. Frontage Road intersection. The quantified effects of the ultimate improvement were addressed in the previous section. Phased improvement figures are shown in Figure 11.

1. Extend Mary Avenue to Hill Street. This improvement alternative proposes extending the north-south collector Mary Avenue to the east-west collector Hill Street. Hill Street connects to South Frontage Road. This improvement is designed to divert the existing traffic volumes at the Tefft Street/South Frontage Road/US 101 southbound off-ramp intersection. The model projects a diversion of approximately 2,500 daily trips from the South Frontage Road approach at Tefft Street.

   Converted to a peak hour basis, this improves intersection operations at the South Frontage Road/Tefft Street/US 101 southbound off-ramp intersection by reducing the northbound Frontage Road left-turn movement and the eastbound Tefft Street right-turn movement. However, the model shows that a large volume of traffic would still pass through the South Frontage Road/Tefft Street/US 101 southbound off-ramp intersection to access the US 101 southbound on-ramp. This approach volume was observed in the Existing Conditions analysis to be substantial and is further complicated by the closely staggered spacing with the southbound US 101 on- and off-ramps.

2. Realign the US 101 southbound on-ramp at Tefft Street to Hill Street. This improvement removes the US 101 southbound on-ramp from its current intersection at Tefft Street and realigns it southerly to South Frontage Road. This effectively eliminates the non-standard staggered southbound US 101 ramp alignment at Tefft Street and leaves the standard four-way Tefft Street/South Frontage Road/US 101 southbound off-ramp intersection. Traffic traveling to the US 101 southbound on-ramp would turn onto South Frontage Road and then enter the isolated ramp.

   The ramp realignment results in changes to the turning movement volumes at the South Frontage Road/Tefft Street/US 101 southbound off-ramp intersection. The westbound left-turn and the eastbound right-turn volumes will increase due to the combining of the US 101 on-ramp turning movement volume with the South Frontage Road turning movement volume. The northbound South Frontage Road approach would decrease due to US 101 southbound on-ramp trips not having to pass through Tefft Street. The modeled reduction in traffic from the northbound S. Frontage Road approach was nearly 1,700 daily trips. However the volume of traffic on the segment of S. Frontage Road between Hill Street and Tefft Street is projected to increase due to all southbound on-ramp traffic accessing the on-ramp from this roadway. The intersection volumes at the Tefft Street/S. Frontage Road/US 101 southbound off-ramp intersection were projected to remain at the same magnitude of volume prior to the ramp realignment. The previous alternative (Mary Avenue extension to Hill Street) was modeled as allowing for the diversion of traffic from the Tefft Street/S. Frontage Road/US 101 southbound off-ramp intersection and was therefore combined with this alternative to form the ultimate planned improvement.



South County Nipomo Traffic Model Update

Figure 11

Tefft Street Corridor Phased Improvements

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SOUTHLAND STREET INTERCHANGE PHASED IMPROVEMENTS

The motivation in constructing additional interchange access at Southland Street is to reduce traffic demand at the Tefft Street interchange and on Orchard Avenue/Joshua Street/Hutton Road. The existing constrained conditions at the Tefft Street interchange forces some traffic diversion onto the SR 166/US 101 interchange, which is four miles away. The SR 166/US 101 interchange is approximately two miles south of the Nipomo community. The new Southland Street interchange was conceived as being able to alleviate congestion at both capacity-constrained facilities. The Southland Interchange was added to the Capital Improvement Program in the previous update. It was not part of the Road Improvement Fee (RIF) program. However, the south bound ramps portion of the interchange is part of the RIF program. Phased improvement figures shown in Figure 12.

1. Construct US 101 southbound on- and off-ramps at Southland Street. This alternative models the construction of new US 101 southbound on- and off-ramps at Southland Street. There currently exists significant traffic congestion along the Tefft Street corridor near the US 101 interchange, and along Orchard Avenue/Joshua Street/Hutton Road resulting from traffic traveling to/from the US 101/SR 166 interchange. The traffic model analysis shows a diversion of nearly 3,100 daily trips onto the new Southland Street-US 101 southbound off-ramp and 4,500 daily trips at the US 101 southbound on-ramps. The model shows that the off-ramp trips are directly diverted from the Tefft Street/US 101 southbound off-ramp. The on-ramp trip volume contains both a portion of trips diverted from the Tefft Street/US 101 southbound on-ramp and from the SR 166/US 101 interchange. The total traffic volume reduction resulting from the Southland ramp construction is projected to control the build-out conditions traffic volumes along Tefft Street such that the Tefft Street interchange volumes are only slightly higher than those observed under existing conditions. The existing intersection deficiencies at the Tefft Street interchange would remain without additional intersection and/or ramp improvements.

2. Construct US 101 northbound on- and off-ramps at Oakglen Avenue. This alternative models the construction of new US 101 northbound on- and off-ramps at Oakglen Avenue. There was no modeled connection to Thompson Avenue from the new northbound on- and off-ramps. Due to the lack of a connection to other major roadways from Oakglen Avenue, the ramps were only projected to divert 600 daily trips from the northbound off-ramp and 1100 trips from the northbound on-ramp.

3. Construct a Southland Street overcrossing only. This alternative models the construction of an US 101 overcrossing from Southland Street to Oakglen Avenue. The model projects the diversion of nearly 2,000 daily trips onto the Southland overcrossing. Without the overcrossing, these trips would have utilized Tefft Street to pass between the eastern and western portions of Nipomo bisected by US 101.

4. Construct a full US 101 interchange at Southland Street. This alternative extends the concept of the first three alternatives by constructing a full US 101 interchange at Southland Street. The new interchange would likely connect with Southland Street on the US 101 southbound ramp side and with Oakglen Avenue on the northbound ramp side. No access from Oakglen Avenue to Thompson Avenue was included in the analysis alternative. Two interchange configurations are shown in Figures 12A and 12B.

   The additional interchange is projected to reduce traffic volumes at the Tefft Street/US 101 interchange. Ramp volumes from US 101 south (US 101 southbound on-ramp, northbound off-ramp) are projected at approximately 4,400 daily trips on each ramp. Ramp volumes from US 101 north (US 101 southbound off-ramp, northbound on-ramp) are projected at approximately 2,600 daily trips on each ramp.

South County Nipomo Traffic Model Update

Figure 12A

Southland Street - US 101 Interchange Alternative 1

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South County Nipomo Traffic Model Update

Figure 12B

Southland Street - US 101 Interchange Alternative 2

File: T795TG16.dwg (26JULY05) 25-6462-05

The diversion in freeway traffic at the new interchange is projected to result in Tefft Street corridor traffic volumes during build-out conditions only slightly higher than those observed under existing conditions. The full interchange reduces approximately 2,500 trips from the Tefft Street corridor. Consistent with the General Plan development scheme, the majority of the trips passing through the new interchange come from Nipomo, west of US 101. The intersection deficiencies currently existing at the Tefft Street interchange would remain without additional intersection and/on-ramp improvements.

A third US 101/Southland Avenue interchange configuration was created by OMNI-MEANS based on additional input from the County. This third configuration, shown in Figure 12C, features at-grade ramps and a US 101 overpass further to the south. Recognizing that this interchange configuration is non-standard and that Caltrans design exceptions would need to be made, the advantage of this intersection is that it allows for phased construction, with the ramps preceding the overpass, with little-to-no "throw-away" construction costs. This configuration is similar to the first two interchange configurations in terms of its traffic operations and is recognized as the preferred alternative within this report.

Carrying forward the Southland Avenue Interchange analysis and the preferred alternative, a supplemental analysis was performed to determine the traffic of diversion from Tefft Street attributable to the phased construction of Southland Avenue Interchange. Table 11 shows the projected traffic diversion with each phase on the Southland Avenue Interchange.

TABLE 11
SOUTHLAND AVENUE INTERCHANGE TRAFFIC DIVERSION

	Tefft Corridor Daily Traffic	Diverted Daily Traffic[1]
Base Conditions (no Southland Interchange)	33,200	-
Phase 1 – Provide US 101 SB Ramps	28,100	5,100
Phase 2 – Provide US 101 NB Ramps	28,100	5,100
Phase 3 – Complete interchange with US 101 overcrossing	24,400	8,800

1. Traffic diversion is the total for each scenario. The volumes are not cumulative.

EL CAMPO ROAD – NORTH AREA ALTERNATIVE CONNECTIONS

Interchange connections to US 101 exist at Los Berros Road interchange, within the South County area, and at the Valley Road and Halcyon Road interchanges, within the City of Arroyo Grande. There also exists an at-grade intersection at El Campo Road. The motivation in improving the access at El Campo Road to a full interchange or constructing a new northern connection elsewhere is to reduce the amount of traffic using the constrained accesses within the City of Arroyo Grande and to improve the overall circulation of the northern and western portions of the South County-Nipomo area. The modeled results of new interchange connections are qualitatively described below.

In addition to adding full interchange access at El Campo Road, the final analysis scenario studies the traffic diversion effect from constructing an El Campo Road westerly extension to Highway. The El Campo Road extension is intended to alleviate traffic demand along Highway 1 and northerly on Halcyon Road into the City of Arroyo Grande.

1. Construct a full US 101 interchange at El Campo Road. This alternative models the construction of a

full US 101 interchange at El Campo Road. The new interchange is projected to alleviate traffic volumes from South County residents traveling through the City of Arroyo Grande to attain freeway access at the Halcyon Road and Fair Oaks Avenue interchanges. A concept drawing of the roadway alignment is shown in Figure 13. Note that this roadway alignment is for illustrative purposes and would require further study on elevation differences and grading compatibility.

Model results support the notion that fewer vehicles will access US 101 via the Halcyon Road interchange in the City of Arroyo Grande after the construction of an El Campo interchange. Using the El Campo Road extension alignment pictured in Figure 13 and removing the existing US 101/El Campo Road at-grade intersection access, the interchange, as a whole, diverts approximately 5,900 total daily trips from other US 101 interchange facilities, including the Halcyon Road interchange in the City of Arroyo Grande. A majority (80%) of the trips passing through the interchange travel to/from US 101 north. Approximately 2,700 daily trips accessing the interchange are diverted from Halcyon Road north, which is 25% of the projected Build-Out Halcyon Road north daily traffic.

South County Nipomo Traffic Model Update

Figure 12C

Southland Street - US 101 Interchange Alternative 3

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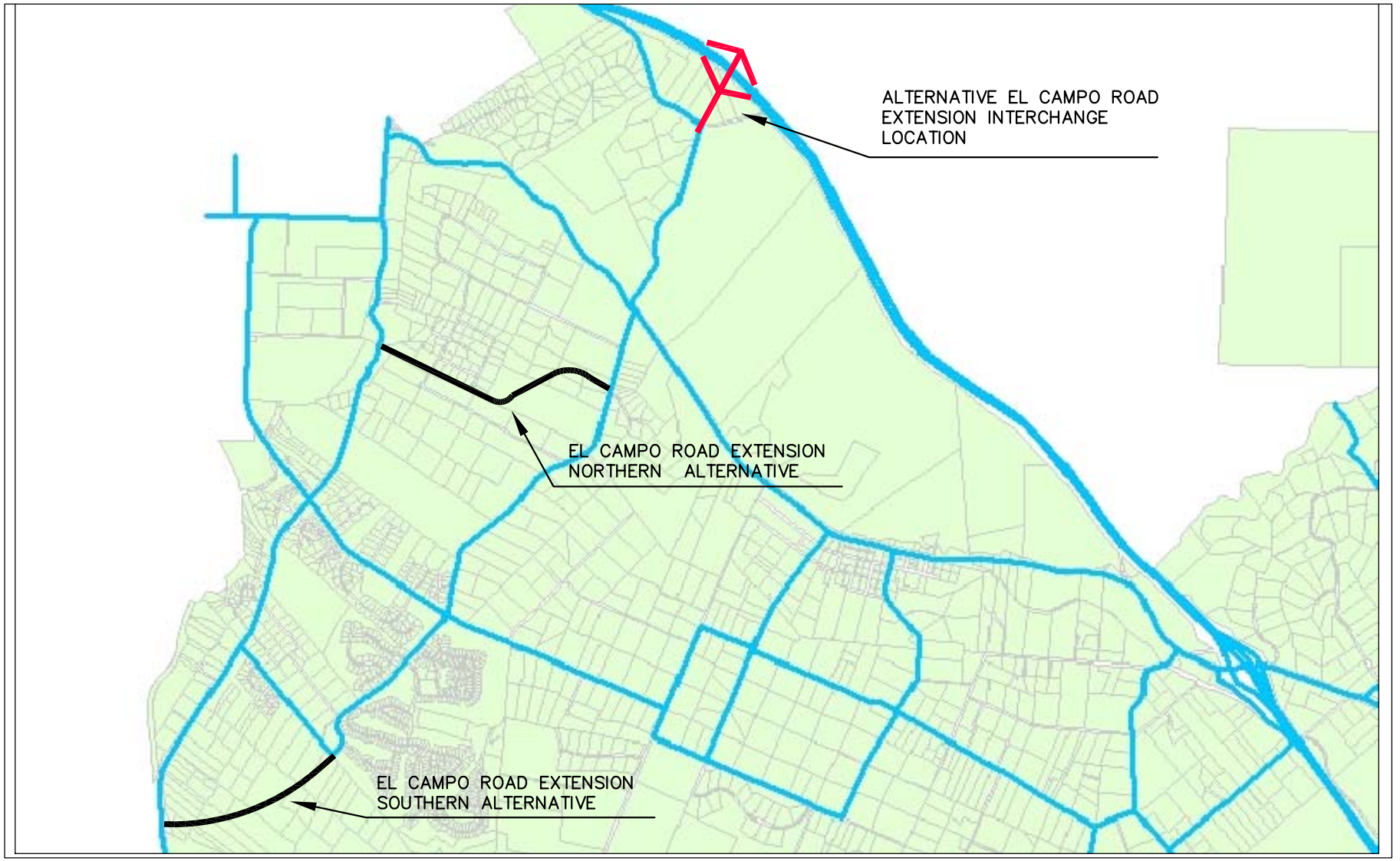

South County Nipomo Traffic Model Update

Figure 13

El Campo Road – US 101 Interchange, Alternative Alignment

File: T795TG14.dwg (30JUN05) 25-6462-05

The daily traffic volume on Halcyon Road north of Highway 1 is projected at 10,115 trips, which is above the existing daily traffic volume of 8,500, with the projected diversion associated with the El Campo Road interchange. The daily traffic volume on Halcyon Road between Highway 1 (north and south) is projected at 13,000 trips, which is substantially more than the existing 7,900 daily trips. Noting that the improvements for Halcyon Road are required under existing conditions, the build-out conditions with traffic diversions associated with the El Campo Road interchange still necessitate the improvements at Halcyon Road between its north and south intersections with Highway 1. The projected diversion onto the El Campo Road interchange may be less than expected due to heavy residential-commercial interaction between the South County area and the City of Arroyo Grande. Additional diversion onto the El Campo Road interchange with the westerly extension of El Campo Road to Highway 1 was calculated in subsequent model runs and the results are described below.

Based on discussions with SLOCOG, the cost of the El Campo Road interchange is estimated at $30,000,000. The interchange is projected to handle an increase of 5,900 daily trips and a total of 8,000 daily trips, with the projected diversion onto the interchange from Halcyon Road estimated at 2,500 daily trips. The projected traffic volume on Halcyon Road between Highway 1 without the El Campo Road interchange is 15,500 daily trips, which is an increase of 7,000 trips. The estimated cost of the Halcyon Road improvements is $23,000,000. The Halcyon Road improvements are required both with and without the El Campo Road interchange.

Due to the relatively low volume of traffic projected to divert from Halcyon Road north onto the El Campo Road interchange and the continued interaction between the South County area and the urban centers of Arroyo Grande and Grover Beach, among other cities to the north, the El Campo Road interchange is not currently recognized as a preferred improvement to alleviate Halcyon Road traffic. Moreover, the estimated cost of the interchange is greater than the cost associated with the full Halcyon Road improvements, and yet does not fully mitigate the future traffic conditions on Halcyon Road. It is therefore recommended that the currently planned improvements to widen Halcyon Road continue to be pursued by the County instead of the El Campo Road interchange.

This amount of traffic diversion projected by this analysis could significantly change, should the City of Arroyo Grande pursue urban development just east of the El Campo Road Intersection. This City has and is considering a significant, large scale mixed use development on the east side of 101 that would require the new interchange. The City of Arroyo Grande has pursued and obtained a Caltrans approved Project Study Report for this proposed interchange. Because of the benefits of this potential interchange to the City, the City will likely continue to pursue this improvement for which the County can pay their fair share.

2. Construct an El Campo Road westerly extension. This analysis scenario considers the extension of El Campo Road to the west, with a new intersection connecting with Highway 1. There are two alternatives for the El Campo Road westerly extension, one to the north and one to the south. The El Campo Road westerly alignment alternatives are also shown in Figure 13.

   When combining the northern alignment alternative with the proposed El Campo Road/US 101 interchange, as described in the previous analysis scenario, the model projects an additional 1,300 daily trip diversion from Halcyon Road and Valley Road north, for a total diversion of 4,200 daily trips. Combining the southern alignment alternative with the directly aligned El Campo Road/US 101 interchange results an additional 1000 daily trip diversion from Halcyon Road and Valley Road north, for a total diversion of 4,800 daily trips. The increment differences in traffic diversion between the analysis scenario without (Alternative 1) and with the El Campo Road westerly extensions (Alternative 2) are directly attributable to traffic diverted from the Mesa. As previously noted, the traffic volume diversion on the modeled El Campo Road interchange may be less than

expected due to heavy residential-commercial interaction between the South County area and the City of Arroyo Grande. On a traffic volume diversion basis alone, the traffic model shows that the northern El Campo Road western extension alignment is superior to the southern extension alignment.

Chapter 6

ALTERNATIVE TRANSPORTATION MODES

As a complement to private automobile traffic, the South County area is served by public transportation. Each transit service within the study area is listed below with a description.

PUBLIC TRANSPORTATION

RTA – South Coast Area Transit – South Coast Area Transit (SCAT) runs nine round trips each weekday on RTA Route 10. RTA Route 10 travels between San Luis Obispo and Santa Maria with stops in Nipomo, Arroyo Grande, Grover Beach, Pismo Beach, and Shell Beach. Regional transit passengers can make connections in San Luis Obispo to all other parts of the County using San Luis Obispo Transit and other RTA routes other transfer locations exist at Ramona Garden Park in Grover Beach and with Santa Maria Transit at the Town Mall Regional Transit Center. Route 10 also serves the San Luis Obispo Amtrak Station, Amtrak and Amtrak throughway bus service at the Grover Beach Multi-modal station and the greyhound and Amtrak thruway bus service center in Santa Maria.

Nipomo Transit – In November 1999, the San Luis Obispo Council of Governments determined, through the unmet need hearing process, that the Community of Nipomo warranted specialized public transit service. The proposed new transit service will be a fixed route service between Nipomo and Grover Beach in the morning period and a late run after 5:00 PM. This route would include stops at Arroyo Grande High School and the Community Hospital. In the afternoon, the system would function as a Dial-A Ride to serve specific destinations in the immediate area of Nipomo.

BICYCLE TRANSPORTATION

The County has established a system to designate bikeways to serve bicycle commuters. There are four standard classes of bikeways. Each class is listed below with a brief description.

- **Class I Bikeway (Bike Path)** provides a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross-cross flow minimized. Class I bikeways are usually found near parks, along freeways, and other interurban roads.
- **Class II Bikeway (Bike Lane)** provides a striped lane for one-way bike travel on a street or highway. Class II bikeways are contiguous with the adjacent motor vehicle travel lanes. Minimum lane widths are four or five *feet*, depending on the presence of on-street parking or raised curbs.
- **Class III Bikeway (Bike Route)** provides for shared use with pedestrian or motor vehicle traffic. Bike route signs designate class III Bikeways. The signs are intended to alert motorists to the presence of bicyclists and to guide bicyclists to use streets determined to be suitable.
- **Class IV Bikeway (Bike Access)** is a roadway which has been identified as a satisfactory place to ride. Class IV bikeways often travel to or through residential neighborhoods, or run parallel to major thoroughfares in rural areas. As with Class III Bikeways, Class IV Bikeways have the characteristics of low traffic volumes and a low prevailing speed of motor vehicles. However, Class IV Bikeways have no specific improvements for bicycles. These routes may lack adequate shoulders and bicycles will have little or no separation from the traffic lane.

In the South County area, there are two main types of bicycle travel, regional and local. Many regional cyclists travel through the area as they traverse the Central Coast. The amount of regional bicycle travel will continue to increase as the state's population and biking popularity increase. Highway 1 was designated the Coastal Bike Route by the State Legislature in the fall of 1990. Caltrans is continuing to work to provide

bikeways on Highway 1.

Local bicycle circulation is provided on County roads. The County Bikeways Plan (details the locations and types of bikeways that exist and are planned for within the South County area. These figures are included here as Figures 15 and 17.

Bikeway System Improvements.

The roadways recommended for widening or new construction will include wide shoulders, needed for capacity, which can be designated Class II bikeways. However, additional road segments are designated bikeways in the County Bikeways Plan, which are not otherwise recommended for widening to improve traffic capacity. These improvements can not be funded through the impact fee program. The following bikeways are recommended for improvement to Class II standard either through development or an alternative-funding source: Division Street, El Campo Road, Juniper Street, South Frontage Road/Blume Street and Woodland Hills Road.

The following roads should be designated Class III or IV bikeways, due to lower automobile traffic volumes: Bonita School Road, Grande Avenue, Las Flores Drive, Mallagh Street, Mary Avenue, Oso Flaco Lake Road, Price Street, Primavera Lane, Shiffrar Way, and Verano Way.

Finally, the County Bikeways Plan also recommends development of Class I bike path around the perimeter of Nipomo Regional Park and along the former Pacific Coast Railway right-of-way. The Department of General Services — Parks Division, as part of their implementation of the County Trails Plan, should develop these recreational facilities.

PEDESTRIAN TRANSPORTATION

Pedestrian activity is generally aligned with roadways and have facilities very similar to Class II, III or IV bikeways as described above. In commercial areas such as downtown Nipomo there already exists sidewalk along many of the streets. The construction of sidewalk is often accomplished through new development as a condition to build. Under current County ordinance, sidewalk construction is required of most projects in commercial, industrial, or multi-family land use categories in the urban or village reserve lines. There are provisions for waiver of these requirements. The General Plan contains special planning area standard which address sidewalk construction. The villages of Callender-Garrett and Los Berros do not currently have sidewalks and none would be required under current County policy.

It is recommended that this study take no action which would discourage pedestrian activity, and to continue to require sidewalks whenever possible to complete the sidewalk system within the business districts. Sidewalk improvements will contribute greatly to the success of such programs as the transit service described above**.**

RIDESHARING

The San Luis Obispo Regional Transit Authority, in cooperation with State and Federal governments, operates the Regional Ridesharing Program. This program provides opportunities for carpool formation through its carpool matching service. In addition, the Transit Authority serves as a clearinghouse for information on all other alternative transportation modes. The ridesharing program concentrates on outreach to major employers, as these have the density of employment necessary to assure successful carpool matching.

One key action, which facilitates ridesharing, is the provision of Park & Ride lots. A Park & Ride lot

currently exists on Tefft Street, east of the US 101 interchange.

TRANSPORTATION SYSTEM MANAGEMENT

Transportation System Management (TSM) is a term for a field of low-cost alternatives which may aid the operation of the overall transportation system. TSM includes a wide range of measures, which either increase the "supply," or improve the roadway network; or decrease the "demand," that is, reduce trips. Some projects that fall into this category have been described elsewhere. For example, intersection channelization and traffic signal synchronization are methods which benefit the "supply" side; transit and bikeway improvements benefit the "demand" side by reducing the total number of private automobile trips.

Chapter 7

COST ESTIMATES AND FUNDING MECHANISMS

This chapter presents the cost estimates developed for the recommended transportation improvements and discusses possible funding mechanisms.

COST ESTIMATES

A series of planning level cost estimates have been prepared for projects discussed in Chapter 4 and 5. The cost estimates are necessary to determine the funding required to implement the transportation improvements. A summary of the recommended projects, cost estimates, recommended funding sources, and expected project completion dates are shown in Table 12.

All cost estimates include the cost of construction, right-of-way, design, administration, environmental considerations, and inspection. All costs for construction activity were determined from typical experiences in San Luis Obispo County. Construction costs include clearing and grubbing, paving, storm drains, lighting, signing, and striping. Roadway edge improvements like curb, gutter, and sidewalk are generally excluded since they are usually constructed at the time of adjacent development.

Funding Mechanisms

Implementation of the elements of the transportation plan for South County will require sources of revenue dedicated to infrastructure investment. Local government has traditionally provided for public facilities, with the costs being financed by revenues derived from gasoline tax and state and federal funds. In the recent past, the traditional revenue sources have shrunk to inadequate levels through a combination of growth, aging capital facilities, State realignment of property tax revenues, construction cost inflation, increasing costs of environmental mitigation and competing needs for limited public dollars.

I. Impact Fees – The California Government Code (Sections 66001-66025) grants authority to local agencies to establish, increase, or impose fees as a condition of approval of a development project within their jurisdictional boundaries. California courts require that such fees be reasonably related to the contributing development's impact on community facilities. Provided that the impact fees are used to finance construction of specific facilities, impact fees are not considered taxes and, therefore, do not require electorate approval. San Luis Obispo County adopted Ordinance No. 2379 in 1988 to provide for the collection of roadway impact fees. A fee program has been established for the study areas of the South County, Avila Beach, Templeton, North Coast, and South Bay (Los Osos). The impact fee is collected at the time of development and held in an account dedicated for road improvements within the area of benefit. Credits toward the fee are provided to landowners who dedicate right-of-way and/or construct facilities listed on the capital improvements table (Table 12).

For the South County area, impact fees were established January 17, 1989 to fund the portion of roadway needs that are attributable to new development within the study area. These improvements were explicitly determined for the likely types of development that will occur in this area over the next 50 or more years. The following discussion highlights the considerations involved in establishing an equitable basis for impact fees in the South County area.

TABLE 12
SOUTH COUNTY CIRCULATION STUDY 2005 UPDATE CAPITAL IMPROVEMENTS PROJECTS

Item Number	RIF Area Number	Road	From	To	Segment Length	Recommended Improvement	Pavement Width	Estimated Total Project Costs	Less			Funding From Impact Fees	Percent From Impact Fees	Actual Construction Cost (Fee Program)	Actual Construction Cost (Non-Fee Program)	Time Needed	Expected Construction Commencement
									Existing Deficiencies (Rd. Funds)	Other Sources	Through Traffic (STIP)						
	Area 1	Hill Street	Mary Avenue	South Frontage Road	750'	Widen roadway; 2 - 12' lanes, 1 left-turn-lane, 2 - 5' bike lanes	46'	$1,436,000	$0	$0	$0	$1,436,000	100%	-	-	-	2010
	Area 1	Mary Avenue	Tefft Street	Hill Street	880'	Construct roadway; 2 - 12' lanes, 1 left-turn-lane, 2 - 5' bike lanes	46'	$2,199,000	$0	$0	$0	$2,199,000	100%	-	-	-	2010
	Area 1	Orchard Avenue	Tefft Street	Division Street	3,500'	3 - 12' lanes, 2 - 5' bike lanes	46'	$1,100,000	$0	$0	$0	$1,100,000	100%	-	-	-	2020
	Area 1	Orchard Avenue / Hutton Road	Division Street	Southland Street	-	1 left-turn-lane, construct shoulders, 2 - 6'	48'	$1,514,000	$0	$624,000	$0	$890,000	65%	$1,367,000	-	-	Complete
	Area 1	Orchard Avenue / Hutton Road	Southland Street	SR 166	-	Construct shoulders, 2 - 6'	46'	$3,303,000	$0	$3,303,000	$0	$0	0%	-	-	-	N/A
	Area 1	Pomeroy Road	At Augusta		-	Curve realignment	46'	$1,982,000	$1,982,000	$0	$0	$0	0%	-	-	-	N/A
	Area 1	Pomeroy Road	Willow Road	Aden Way	-	Widen and curve realignment	46'	$2,100,000	$2,100,000	$0	$0	$0	0%	-	-	-	N/A
	Area 1	Sandydale Drive	Near Pomeroy Road		660'	Pave unpaved portion		$182,000	$0	$182,000	$0	$0	0%	-	$175,000	2003	Complete
	Area 1	S. Frontage Road	Tefft Street	Grande Ave	1,975'	Realignment and widening	46'	$1,318,000	$0	$0	$0	$1,318,000	100%	-	-	-	2010
	Area 1	S. Frontage Road	US 101 SB On-Ramp		-	Construct on-ramp at Hill Street/S. Frontage Road, signalize	20'	$3,953,000	$0	$0	$0	$3,953,000	100%	-	-	-	2010
	Area 1	Southland Street	Interchange		-	Southbound US 101 On/Off-Ramps		$9,350,000	$0	$0	$0	$9,350,000	100%	-	-	-	2005
	Area 1	Southland Street	Interchange		-	Northbound US 101 On/Off-Ramps and Bridge		$19,008,000	$0	$19,008,000	$0	$0	0%	-	-	-	2025
	Area 1	Tefft Street	US 101 Overpass		-	Widen to six lanes, add left-turn pocket for US 101 NB on-ramp and SB S. Frontage Road	88'	$4,013,000	$0	$0	$0	$1,613,761	100%	$1,613,761	-	-	Complete
	Area 1	Tefft Street / US 101 Ops PSR	Interchange		NA	Relocate SB on-ramp, add 2 left-turn-lanes for the eastbound approach onto the NB on-ramp	Varies	$8,000,000	$0	$1,500,000	$1,500,000	$5,000,000	63%	-	-	2005	2010
	Area 1	Tefft Street /US 101	Interchange		-	Signal coordination		$25,000	$0	$25,000	$0	$0	0%	$4,000	-	-	Complete
	Area 1	Tefft Street	Mary Avenue	US 101	-	Construct median		$111,000	$0	$111,000	$0	$0	0%	-	-	-	-
	Area 1	Tefft Street	Oakglen Avenue	Thompson Avenue	2,500'	Full improvements	40'	$3,113,100	$414,152	$686,000	$150,000	$1,893,408	61%	$3,144,000	-	-	-
	Area 1	Tefft Street	Orchard Avenue	Rose Drive	-	Construct 3 - 12' lanes, 2 - 6' shoulders		$500,000	$0	$142,767	$0	$357,233	71%	$500,000	-	-	Complete

TABLE 12 (CONT'D)
SOUTH COUNTY CIRCULATION STUDY 2005 UPDATE CAPITAL IMPROVEMENTS PROJECTS

Item Number	RIF Area Number	Road	From	To	Segment Length	Recommended Improvement	Pavement Width	Estimated Total Project Costs	Less			Funding From Impact Fees	Percent From Impact Fees	Actual Construction Cost (Fee Program)	Actual Construction Cost (Non-Fee Program)	Time Needed	Expected Construction Commencement
									Existing Deficiencies (Rd. Funds)	Other Sources	Through Traffic (STIP)						
	Area 1	Thompson Road	Chestnut Street	Price Street	-	Complete urban street improvements and drainage structure for Haystack Creek	48'	$1,000,000	$0	$0	$0	$1,000,000	100%	-	-	-	-
	Area 1	Willow Road	Pomeroy Road	Thompson Avenue	9,200'	Construct roadway; 2 - 12' lanes, 2 - 8' shoulders	40'	$19,725,000	$0	$0	$0	$19,725,000	100%	-	-	-	2004
	Area 1	Willow Road	US 101 Interchange		-	Construct interchange	-	$19,293,000	$0	$0	$4,000,000	$15,293,000	79%	-	-	-	2010
	Area 1	Intersection	Division Street	South Frontage Road	-	Signalize	-	$200,000	$0	$0	$0	$200,000	100%	-	-	-	2040
	Area 1	Intersection	Grande Avenue	South Frontage Road	-	Signalize	-	$200,000	$0	$0	$0	$200,000	100%	-	-	-	2040
	Area 1	Intersection	Juniper Street	Mary Avenue	-	Signalize	-	$200,000	$0	$0	$0	$200,000	100%	-	-	-	2040
DONE	Area 1	Intersection	Orchard Avenue	Division Street	-	Signal	-	$138,000	$0	$0	$0	$138,000	100%	$138,000	-	-	-
	Area 1	Intersection	S. Frontage Road	Hill Street	-	Signalize	-	$200,000	$0	$0	$0	$200,000	100%	-	-	-	-
	Area 1	Intersection	Tefft Street	Thompson Avenue	-	Signalize	-	$175,000	$0	$0	$0	$175,000	100%	-	-	-	-
	Area 1	Intersection	SR 166	US 101 SB Ramps / Hutton Road	-	Roundabout	-	$5,000,000	$0	$5,000,000	$0	$0	0%	-	-	-	-
	Area 1	Intersection	SR 166	US 101 NB Ramps / Thompson Road	-	Roundabout	-	$3,000,000	$0	$3,000,000	$0	$0	0%	-	-	-	-
	Area 2	Aden Road	Hetrick	Pomeroy	975	Construct roadway; 2 - 12' lanes, 2 - 8' shoulders	36'	$1,112,000	$1,112,000	$0	$0	$0	0%	-	-	-	2004
	Area 2	El Campo Road	Halcyon Road	Los Berros Road	8350	Construct shoulders, 2 - 8'	44'	$2,426,000	$0	$0	$0	$2,426,000	100%	-	-	-	2040
	Area 2	Halcyon Road	HWY 1 North	HWY 1 North	6600	Widen/Realign	-	$8,717,000	$0	$0	$2,000,000	$6,717,000	77%	-	-	-	2004
	Area 2	Halycon Road	Produce Place	HWY 1	-	Climbing lane	-	$16,032,000	$0	$0	$4,000,000	$12,032,000	75%	-	-	-	-

TABLE 12 (CONT'D)
SOUTH COUNTY CIRCULATION STUDY 2005 UPDATE CAPITAL IMPROVEMENTS PROJECTS

Item Number	RIF Area Number	Road	From	To	Segment Length	Recommended Improvement	Pavement Width	Estimated Total Project Costs	Less			Funding From Impact Fees	Percent From Impact Fees	Actual Construction Cost (Fee Program)	Actual Construction Cost (Non-Fee Program)	Time Needed	Expected Construction Commencement
									Existing Deficiencies (Rd. Funds)	Other Sources	Through Traffic (STIP)						
	Area 2	Halcyon Road	Arroyo Grande City Limits	HWY 1	3,000'	2 - 6' shoulders	32'	$119,646	$0	$0	$0	$119,646	100%	$119,646	-	-	Complete
	Area 2	Halcyon Road	HWY 1	El Campo Road	4,160'	2 - 11' lanes, 2 - 5' shoulders	32'	$106,000	$0	$0	$0	$95,104	100%	$95,104	-	-	Complete
	Area 2	Los Berros Road	Valley Road	El Campo Road	-	Left-turn channelization at El Campo, Century Lane; 2 - 8' shoulders	40'	$5,049,000	$0	$0	$200,000	$4,849,000	96%	-	-	-	-
	Area 2	Los Berros Road	El Campo Road	Quailwood Lane	-	2 - 8' shoulders	40'	$2,078,000	$0	$121,500	$490,000	$1,466,500	71%	-	-	-	-
	Area 2	Los Berros Road	Quailwood Lane	US 101	-	2 - 8' shoulders	40'	$2,683,000	$0	$0	$0	$2,683,000	100%	-	-	-	-
	Area 2	Los Berros Road / Thompson Road	N. Frontage Road	US 101 NB ramps	1,300'	Left-turn channelization	52'	$1,000,000	$0	$1,000,000	$0	$00,000	0%	-	-	2005	2008
	Area 2	North Frontage Road	Willow Road	Summit Station Road	5,600'	Construct 2 - 12' lanes, 2 - 8' shoulders	40'	$2,912,000	$00,000	$2,912,000	$00,000	$00,000	0%	-	-	-	-
	Area 2	HWY 1	Willow Road	1.3 mi w\o Willow Road	15,750'	2 - 6' shoulders, 1 left-turn lane	42'	$2,692,000	$0	$509,000	$0	$2,183,000	81%	-	-	-	-
	Area 2	Intersection	Los Berros Road	US 101 SB Ramps	-	Signalize	0'	$200,000	$0	$58,000	$0	$142,000	71%				2025
	Area 2	Intersection	Thompson Ave	US 101 NB Ramps	-	Signalize	0	$200,000	$0	$58,000	$0	$142,000	71%				2025
								$157,664,746	$5,608,152	$38,240,267	$12,340,000	$99,096,652	TOTAL				
								$112,338,100	$4,496,152	$33,581,767	$5,650,000	$66,241,402	Area 1				
								$45,326,646	$1,112,000	$4,658,500	$6,690,000	$32,855,250	Area 2				

A. Public/Private Share of Costs – In determining an appropriate level for the impact fees, improvement costs must first be apportioned among the public and private sectors according to the benefits provided to existing and future traffic sources. Existing deficiencies are not eligible for correction with impact fee funding, and such costs must be subtracted from the cost estimates. Existing deficiencies are defined as problems present at the time of initial roadway or intersection construction (i.e. vertical and horizontal curves).

The next step in assigning eligible costs to the impact fee calculation is to estimate the portion of roadway improvement costs attributable to through traffic. These costs are not eligible for funding by impact fees. In the South County, most through traffic uses Highway 101. "Local" traffic, i.e. traffic generated within the South County, creates the need for improvements at the freeway interchanges. For this reason, the improvements to the Tefft Street interchange, and the construction of the new Willow Road interchange, are included in the impact fee calculations. Also, the need for improvements on Highway 1 from Willow Road to 1.3 miles west of Willow Road is a result of local development and, therefore, has been included in the impact fee calculations.

B. Areas 1 and 2 – The South County Circulation Study has one of the largest geographic areas of any in the County's transportation planning study areas. The South County Study area is characterized by a natural "screenline" (Black Lake Canyon) that spans approximately across the center of the area, thereby forming a natural transportation barrier or "traffic shed". For the most part, the recommended transportation improvements are concentrated in the Nipomo urban area, south of the screenline, and in the northwest portion of the Nipomo Mesa, north of the screenline. The exception is the proposed Willow Road extension and interchange, which begins near the eastern end of the canyon and runs easterly and roughly in line with the Canyon itself. For this reason, the study area has been divided into two Areas, using the Black Lake Canyon and the Willow Road extension as the primary boundary.

Historically, Area 1 and Area 2 are defined as follows: Area 1 includes the Nipomo urban area and extends north and west as far as the Black Lake Village area. Area 2 consists of the portion of Nipomo Mesa north of the Canyon and the Willow Road extension, and also includes the village of Callender-Garrett, Woodlands and the surrounding rural area along Highway 1 that contributes traffic to the proposed improvements in the Halcyon Road area. Figure 1 shows the boundaries of the two planning areas.

Since the last update, the Woodlands project has completed an Environmental Impact Report (EIR) and begun construction. The Woodlands project was also included in the model developed for this update. As stated by the Woodlands project EIR, approximately 75% of the Woodlands traffic will travel into the Community of Nipomo and 25 % on to the Highway 1 corridor. Consistent with the year 2004 update, it is recommended that the fees paid from the Woodlands project be divided between Area 1 and Area 2 based on the percentage of traffic traveling to each area. The recommended impact fee schedule shown in Table 16 reflects the 75/25 fee split.

The 1994/95 Update determined that since the Willow Road extension formed the boundary between Area 1 and Area 2, an 80/20 cost split (80% from Area I and 20% from Area 2) was appropriate. As observed in the 2004 Circulation Study Update, the rural nature and lack of available services in Area 2 results in fewer new residences and businesses possible than in Area 1. Based on the 80/20 cost split, this caused the per trip fee for Area 2 to rise to an unreasonable burden. To relieve the burden on Area 2, the 2004 Circulation Study Update recommended that the cost burden of Willow Road be shifted to a 100/0 cost split (100% from Area 1, 0% from Area 2). With the addition of the Woodlands project, however, fees from the Woodlands project were set at 75/25 between Area 1 and 2. The recommended impact fee schedule shown in Table 16 reflects the 100/0 cost split for areas outside the Woodlands project.

C. Distribution Among Future Traffic Sources. When the total private share of costs has been established, these costs must be further distributed among the various land uses that contribute to traffic growth. The calculated fees are based on the amount of traffic generated during the weekday afternoon (PM) peak hour by each type of new development. The amount of traffic is determined from the Institute of Transportation Engineers (ITE)-published *Trip Generation (7th Edition).* The change in land use and corresponding number of equivalent trip units, PM peak hour trips, has been recalculated to reflect year 2005 conditions. Table 13 shows the building activity in the South County area since the 2001 South County Circulation Study.

TABLE 13
SOUTH COUNTY BUILDING ACTIVITY, 2001 – 2005

	2001		2002		2003		2004		2005		Total		
	Area 1	Area 2	Area 1	Area 2	Area 1	Area 2	Area 1	Area 2	Area 1	Area 2	Area 1	Area 2	Area 1 + 2
Single Family Dwelling Units	250	90	94	140	97	134	290	139	180	91	911	594	1,505
Multi-Family Dwelling Units	-	-	-		4		82		20		106	0	106
Mobile Homes	-		-		15	7	*	*	*	*	15	7	22
Total Residential											**1032**	**601**	**1,633**
Commercial Buildings/Tenant Improvements	8	4	28	8	17	2	6	2	6	4	65	20	85
Warehouse/Tenant Improvements	1	3	2	4	-	1	6	1	-		9	9	18
Mini Storage Facilities	2		1		-		-		-		3	0	3
Service Stations	2		1		-		-		-		3	0	3
Greenhouse Improvements	2	2	-	2	-		1		1		4	4	8
Agriculture Storage Buildings	9	15	-	3	-		-		-		9	18	27

**Included in Single Family Residential*

Tables 14A, 14B, and 14C show the change in projected future land use for residential, non-residential, and miscellaneous land uses between the year 2000 and 2005 model updates.

TABLE 14A
2000 TO 2005 MODEL UPDATE RESIDENTIAL LAND USE COMPARISON

Year 2000 Update	Units	Existing	Added	Build-Out	EDU	Existing PHT	Added PHT	PHT
Area 1								
Single Family Residential	DU	4286	2,843	7,129	1.00	4,286	2,843	7,129
Multi-Family Residential	DU	167	783	950	0.62	104	485	589
Area 2								
Single Family Residential	DU	1542	2,964	4,506	1.00	1,542	2,964	4,506
Multi-Family Residential	DU	2	80	82	0.62	1	50	51
Total		**5,997**	**6,670**	**12,667**	**-**	**5,933**	**6,342**	**12,275**
Year 2005 Update	**Units**	**Existing**	**Added**	**Build-Out**	**EDU**	**Existing PHT**	**Added PHT**	**PHT**
Area 1								
Single Family Residential	DU	5,212	2,375	7,587	1.00	5,212	2,375	7,587
Multi-Family Residential	DU	273	710	983	0.62	169	440	609
Area 2								
Single Family Residential	DU	2,136	1,750	3,886	1.00	2,136	1,750	3,886
Multi-Family Residential	DU	2	67	69	0.62	1	42	43
Total		**7,623**	**4,902**	**12,525**	**-**	**7,519**	**4,607**	**12,125**

Note: EDU - Equivalent Dwelling Unit
PHT - Peak Hour Trip

TABLE 14B1
2000 MODEL UPDATE COMMERCIAL/RETAIL LAND USE

	Land Use (KSF)				Peak Hour Trips		
Year 2000 Update	**Existing**	**Added**	**Build-Out**	**EDU**	**Existing PHT**	**Added PHT**	**PHT**
Area 1							
Retail	258	1,117	1,375	3.74	965	4,178	5,143
Services	156	422	578	0.92	144	388	532
Retail/Services Total	***414***	***1,539***	***1,953***	***-***	***1,108***	***4,566***	***5,674***
Office	49	157	206	1.49	73	234	307
Area 2							
Retail	87	75	162	3.74	325	281	606
Services	161	0	161	0.92	148	0	148
Retail/Services Total	***248***	***75***	***323***	***-***	***474***	***281***	***754***
Office	0	335	335	1.49	0	499	499
Retail/Services Total	662	1,614	2,276		1,582	4,846	6,428
Office Total	49	492	541		73	733	806
Non-Residential Total	**711**	**2,106**	**2,817**		**1,655**	**5,579**	**7,234**

TABLE 14B2
2005 MODEL UPDATE COMMERCIAL/RETAIL LAND USE

	Land Use (KSF)				Peak Hour Trips		
Year 2005 Update	**Existing**	**Added**	**Build-Out**	**EDU**	**Existing PHT**	**Added PHT**	**PHT**
Area 1							
Hi-generating Retail	213	1,383	1,596	3.75	798	5,187	5,985
Low-generating Retail	496	346	842	1.09	541	377	918
Retail Total	***709***	***1,729***	***2,438***		***1,339***	***5,564***	***6,902***
General Office	31	123	154	1.49	46	183	229
Med Office	21	50	71	3.72	78	186	264
Office Total	***52***	***173***	***225***		***124***	***369***	***494***
Area 2							
Hi-generating Retail	96	149	245	3.75	360	559	919
Low-generating Retail	64	55	119	1.09	69	60	129
General Retail	***160***	***204***	***364***		***429***	***619***	***1,048***
General Office	0	334	334	1.49	0	498	498
Med Office	21	0	21	3.72	79	0	79
Office Total	***21***	***334***	***356***		***79***	***498***	***578***
General Retail Total	869	1,933	2,802		1,768	6,183	7,951
General Office Total	73	507	581		204	867	1,071
Non-Residential Total	**942**	**2,440**	**3,383**		**1,972**	**7,050**	**9,022**

Note: EDU - Equivalent Dwelling Unit
PHT - Peak Hour Trip

TABLE 14C1
2000 MODEL UPDATE NON-RESIDENTIAL, NON-COMMERCIAL LAND USE

Year 2000 Update	Units	Existing	Added	Build-Out	EDU	Existing PHT	Added PHT	PHT
Area 1								
Industrial	KSF	123	0	123	0.98	121	0	121
Golf	Holes	27	0	27	2.74	74	0	74
Park	Acres	141	0	141	-	0	0	0
High School	Student	0	1,800	1,800	0.15	0	270	270
School	Student	1,295	700	1,995	-	0	0	0
Greenhouse	KSF	4,036	10,763	14,799	0.27	1,090	2,906	3,996
Church	KSF	21	0	21	-	0	0	0
Utilities	Empl.	0	0	0	-	0	0	0
Area 1 Total						***1,284***	***3,176***	***4,460***
Area 2								
Industrial	KSF	468	921	1,389	0.98	459	903	1,361
Golf	Holes	27	36	63	2.74	74	99	173
Park	Acres	141	12	153	-	0	0	0
High School	Student	175	0	175	0.15	26	0	26
School	Student	800	0	800	-	0	0	0
Greenhouse	KSF	2,033	5,944	7,977	0.27	549	1,605	2,154
Church	KSF	36	0	36	-	0	0	0
Utilities	Empl.	150	0	150	-	0	0	0
Area 2 Total						***1,108***	***2,606***	***3,714***
South County Total						**2,392**	**5,782**	**8,174**

TABLE 14C2
2005 MODEL UPDATE NON-RESIDENTIAL, NON-COMMERCIAL LAND USE

Year 2005 Update	Units	Existing	Added	Build-Out	EDU	Existing PHT	Added PHT	PHT
Area 1								
Light Industrial	KSF	97	0	97	0.98	95	0	95
Heavy Industrial	KSF	95	0	95	0.68	64	0	64
Schools	Students	600	1,801	2,401	0.15	90	270	360
Govt/Public	Acres	66	13	79	-	0	0	0
Churches	Acres	35	0	35	-	0	0	0
Golf	Holes	27	0	27	2.74	74	0	74
Parks/ Recreational	Acres	268	92	359	-	0	0	0
Agriculture	Acres	1,320	938	2,258	-	0	0	0
Specialty Agriculture (Greenhouse)	Acres	482	618	1,101	3.50	1,688	2,164	3,852
Misc/Utilities/Other	Acres	15	35	49	-	0	0	0
Area 1 Total						**2,011**	**2,435**	**4,446**
Area 2								
Light Industrial	KSF	581	120	702	0.98	570	118	688
Heavy Industrial	KSF	959	0	959	0.68	652	0	652
Schools	Student	200	0	200	0.15	30	0	30
Govt/Public	Acres	0	25	25	-	0	0	0
Churches	Acres	23	0	23	-	0	0	0
Golf	Holes	27	36	63	2.74	74	99	173
Parks/ Recreational	Acres	181	333	514	-	0	0	0
Agriculture	Acres	2,627	422	3,049	-	0	0	0
Specialty Agriculture (Greenhouse)	Acres	179	432	610	3.50	625	1,510	2,136
Misc/Utilities/Other	Acres	89	1,958	2,047	-	0	0	0
Area 2 Total						**1,951**	**1,727**	**3,678**
South County Total						**3,962**	**4,162**	**8,124**

Note: EDU - Equivalent Dwelling Unit PHT - Peak Hour Trip

As shown in Tables 14A, 14B, and 14C, the build-out number of peak hour trips between the year 2000 and 2005 model updates is comparable for the residential, commercial-retail, and other non-residential land uses. There are observed increases in Peak Hour Trips (PHT) in the year 2005 update data and decreases in added PHT, which are all attributable to ongoing growth in the South County Area.

To calculate the recommended fees, the eligible improvement costs are first divided by the total number of new trip ends. Then the portion of the fee allocated to retail uses is adjusted for a 25 percent rate of pass by trips — those trips which are already using the roadway network and are merely diverted into and out of the new businesses. This rate is consistent with the ITE recommendations for small retail shops. Finally, the fees are adjusted so that the forecast new trips that travel between new land uses at both ends are not "double-charged". In accordance with the Board of Supervisors' policy as implemented in other areas of San Luis Obispo County, these trips are "charged" at the residential end.

Table 15 summarizes the funding from impact fees, the funds already contributed by existing development, and the added peak hour trips projected for future development within Area 1 and Area 2, respectively.

TABLE 15
SOUTH COUNTY PROJECT COSTS AND AREA TRIP SHARE

	Total Required Funding From Impact Fees	Funds Collected (as of March 31, 2005)	Net Required Funding From Impact Fees
Area 1	$66,241,402	$9,991,310	$56,250,092
Area 2	$32,855,250	$4,932,570	$27,922,680
	$99,096,652	$14,923,880	$84,172,772
	Additional Peak Hour Trips (PHT)		
	Residential	**Commercial/Retail**	**Non-Residential Other**
Area 1	2,815	5,933	2,164
Area 2	1,792	1,117	1,727

The fees for any new development are calculated at the time of building permit issuance. Table 16 shows the fees using the Area l/Area 2 split.

TABLE 16A
RECOMMENDED FEE SCHEDULE

Land Use	Current Fee	Proposed Fee	Fee Increase	% Change	Woodlands Contribution
Area 1					75%
Residential	$8,557/pht	$10,337/pht	$1,780/pht	21%	$7,753/pht
Retail	$1,325/pht	$2,932/pht	$1,607/pht	121%	$2,199/pht
Other	$4,117/pht	$4,510/pht	$393/pht	10%	$3,383/pht
Area 2					25%
Residential	$8,391/pht	$8,954/pht	$563/pht	7%	$2,239/pht
Retail	$1,818/pht	$3,147/pht	$1,329/pht	73%	$787/pht
Other	$6,057/pht	$4,842/pht	-$1,216/pht	-20%	$1,210/pht

pht: PM Peak Hour Trip

It is recommended that the County modify the South County Road Improvement Fee based on the recommended fee structure shown in Table 16. Residential is defined as all places where people begin or end their day. (i.e. single family dwelling units, multi-family dwelling units, mobile home dwelling units).

Retail is defined as all businesses that can receive a pass-by credit (i.e., retail, offices, commercial service). Other includes anything not included in residential or retail.

Consistent with the 2004 Update to the South County Circulation Study, this report recommends that the Woodlands development pay 75% of their fees into Area 1 and 25% of their fees into Area 2. Table 16B shows the Woodlands fee breakdown, the amount of fee charged, and the amount deposited in each account.

TABLE 16B
WOODLANDS FEE BREAKDOWN

Land Use	Current Fee	Proposed Fee	Fee Increase	% Change	Area 1 Contribution	Area 2 Contribution
Residential	$6,363/pht	$9,991/pht	$3,628/pht	57%	$7,753/pht	$2,239/pht
Retail	$1,083/pht	$2,985/pht	$1,902/pht	176%	$2,199/pht	$787/pht
Other	$3,607/pht	$4,593/pht	$986/pht	27%	$3,383/pht	$1,210/pht

Per the 2004 Annual Update to the South County Circulation Study,

The County is working in concert with Caltrans and the developers of the Woodlands to advance the Road Impact Fees that will be generated by the Woodlands development; approximately $13 million. The proposed timing is to have the total fees paid by 2010 or 2011 to coincide with development and construction. This will advance the initial construction of the project. The road impact fee is normally split 75% to Area 1 and 25% Area 2. Therefore 25% of the fees paid by the Woodlands will need to be paid back to Area 2 over a period of time with future road impact fees collected in Area 1. The 25% loan balance will be adjusted annually by the rate of increase to the road impact fee. Interest on the loan will match the interest paid on the fund accounts.

Initial construction is Willow Road from Pomeroy Road to the US 101 Southbound SB Ramps.

The progression of the County-assessed traffic fees in the South County area is shown in Table 17.

TABLE 17
SOUTH COUNTY TRAFFIC IMPACT FEES

Year	Traffic Impact Fee					
	Area 1			Area 2		
	Residential	Retail	Other	Residential	Retail	Other
2000	$3,444/pht	$524/pht	$807/pht	$3,052/pht	$646/pht	$995/pht
2001	$3,979/pht	$606/pht	$932/pht	$3,441/pht	$729/pht	$1,121/pht
2002	$3,979/pht	$606/pht	$932/pht	$3,479/pht	$737/pht	$1,134/pht
2003	$6,394/pht	$990/pht	$3,300/pht	$6,269/pht	$1,358/pht	$4,527/pht
2004	$6,835/pht	$1,058/pht	$3,528/pht	$6,702/pht	$1,452/pht	$4,839/pht
2005	$8,557/pht	$1,325/pht	$4,117/pht	$8,391/pht	$1,818/pht	$6,057/pht
2006 (Proposed)	$10,337/pht	$2,932/pht	$4,510/pht	$8,954/pht	$3,147/pht	$4,842/pht

I. Other Funding Sources

With the adoption of an impact fee program, a major new funding source for roadway improvements was established. Fees from new development are placed into an account to support the construction of projects included in this plan. This account will continue to grow at a rate corresponding to the rate of new

development within the South County study area.

As noted above, approximately 80% of the needed transportation improvements for the community may be attributed to new development through impact fees. Obviously, implementation of the circulation plan will require other sources of funds to supplement revenues associated with impact fees. Table 32 summarizes the types of funding sources needed to complete the other elements of the plan. The County seeks to jointly fund projects with Caltrans on facilities where joint influence exists. For example, joint influence exists or is projected to occur on Halcyon Road, the Southland on-ramp, and Highway 1.

TABLE 18
SUMMARY OF NEEDED FUNDING BY SOURCE

Total Cost of Recommended Transportation Improvements:	$157,664,746
Recommended Sources of Funding:	
Impact Fees Fees charged on new development within the Study area under the provision of the County's Road Improvement Fee Ordinance	$99,096,652
Bikeways Any appropriate bikeways funding source including State Bikeway Account, Federal (TEA-21), or County Roads budget bikeways allocation.	Variable
Parks & Trails Any appropriate parks and trails funding sources for which these projects may be eligible	Variable
Transportation Development Act (T.D.A) Funding from California's Transportation Development Act, which allocates a portion of sales tax revenue to public transit improvements and operations, as will as other transportation projects.	Variable

A. State Gas Tax Allocations. Revenues from the taxes collected on fuel purchases are distributed in part to cities and counties within the state. The allocation considers the number of vehicle registrations and mileage of maintained roadways within each jurisdiction. Gas tax revenues have been the traditional funding source for much of the historic development of San Luis Obispo County's road system. In recent years, revenues have declined in real terms due to the increasing fuel efficiency of the motor vehicle population. These revenues are primarily used for maintenance of the county road system, and this trend can be expected to continue.

B. General Fund Revenues. General fund revenues accrue to the County from the imposition of sales and property taxes. These taxes fund a number of county services and are distributed through the budgetary process. Currently, the Road fund receives $3.8 million a year in General Fund revenue. However, the stability of these revenues is dependent on consistent allocation from the general fund.

C. Local Option Sales Tax. State law provides for imposition of a voter-approved optional 1/2-cent or 1-cent sales tax that can be dedicated exclusively to transportation improvements. This approach could be used to implement a program of countywide transportation projects. Generally, high-cost and high-priority projects with countywide benefits would be the focus of this program. San Luis Obispo Council of Governments is reviewing ways in which 1/2 cent sales tax could be established for a broad range of transportation facilities.

D. Federal Funding. In 1997, the U.S. Congress passed the Transportation Efficiency Act for the 21st Century (TEA-21) which authorized the federal-aid highway and transit programs. TEA-21 included funding for such traditional programs as highways, bridges and transit, as well as innovative programs for congestion management, air quality and intelligent vehicle-highway system. The County is working with

State and Federal agencies to identify which of the TEA-21's many programs will be applicable in San Luis Obispo County, and is taking steps to secure such funding to the extent possible. However, San Luis Obispo County must compete with other jurisdictions for these funds, and unless exchanged for State funds, must comply with federal guidelines for processing and environmental review for candidate projects.

TEA-21 has been updated by SAFETEA-LU. Currently $37.4 million has been programmed for San Luis Obispo County.

E. Assessment District. Another source of funding public improvement projects is the creation of an assessment district, comprised of landowners directly benefiting from the projects. California law provides for the issuance of bonds secured by the assessments and property liens. Costs for assessment districts are spread among properties on the basis of benefit. Typical factors used in measuring benefit include property frontage, acreage, and trip generation potential. Assessment district funding is often used to augment other sources of funding for projects. In South County, portions of the costs of roadway corridor improvements could be financed with property assessments. In addition, property owners can voluntarily initiate assessment districts to fund improvements such as storm drainage, street lighting, and sidewalks.

F. **Air Quality Mitigation Fees.** In South County, an air quality impact fee is administered by a coalition of county agencies. The fee generates revenues to be used to support transit service improvements, transit amenities including bus shelters, park & ride lots, and bicycles facilities. Bicycle routes also could be eligible for funding by this source.

G. State Bike Lane Account. The State of California currently makes available over $1,000,000 annually to local agencies statewide, for the construction of bikeway facilities. Interested local agencies may make application for eligible projects, such as those listed as exclusive bike/pedestrian facilities.

H. Transportation Development Act (TDA). This funding source provides resources for the development of transit projects. Funding is derived from state sales tax revenues and in appropriated to the county and its incorporated cities on a population basis. Not all TDA funds are allocated to transit projects; jurisdictions may fund road projects, bikeways and transit if no unmet transit service needs exist, as determined annually by the San Luis Obispo Council of Governments. The transit percentage of TDA funds is variable, depending upon established unmet needs, currently averaging 50 percent allocated to transit.

I. Community Service District/County Service Area Charges. A Community Services District or County Service Area can impose service charges to finance projects. Similar to an assessment district, the amount of the service charge levied against a parcel of land must directly relate to the benefit.

Implementation of the transportation improvements in the South County will likely rely on a combination of funding sources. Development impact fees, general county revenues, and assessment districts are reliable and stable sources of financing for public projects. Advance planning would be required to secure federal funds or to implement optional countywide sales tax.

PRIORITIES AND EXPECTED CONSTRUCTION COMMENCEMENT

The project priorities and expected construction commencement schedule are shown in Table 12. Project status is shown below in Table 19.

TABLE 19
SOUTH COUNTY ROAD IMPROVEMENT PROJECT WORK STATUS

Department Priority	Road Name	Description	Type	Funding Source	Complete Construction	Comments
IN CONSTRUCTION						
	Los Berros Road	Stanton Road to Pomeroy Road	Operations, Safety	STIP	2006	Widening, channelization
GOING TO CONSTRUCTION						
	Pomeroy Road	Juniper Road to Camino Caballo	Operations, Safety	Road	2007	Widening, channelization
	Halcyon Road & Highway 1 Alignment	At Highway 1	Capacity	RIF, STIP	2007	Completing environmental and PS&E
DEVELOPING PROJECT PLANS						
	Willow Road Extension	Pomeroy Road to Thompson Avenue	Operations	RIF	2009	Environmental work underway
	Willow Road Interchange	US 101	Operations	RIF, STIP	2012	Environmental work underway
	Halcyon Road Climbing Lane	Highway 1 to Los Berros Creek	Capacity	RIF, STIP	2012+	Design underway
	Hill Street SB On-Ramp	US 101 Southbound On-Ramp at Hill Street	Operations	RIF	2010	PSR underway
	Mary Avenue	Hill Street to Tefft Street	Capacity	RIF	Spring 2008	Reimbursement Agreement
	Bike Lane - Division Street	S. Frontage Rd to Orchard Rd	Operations	SCAQ	2007	
	Bike Lane - Thompson Avenue	Tefft St. to Highschool	Operations	SCAQ	2007	
	Bike Lane - Hazel Lane	Division St. to Tefft St.	Operations	Road	2007	
DEVELOPING PROJECT SCOPE						
	Southland / US 101 Ramps	Southland Avenue at South Frontage Road	Operations	RIF, STIP		By others

Chapter 8

TRAFFIC MODEL USER GUIDANCE MANUAL

This section presents instructions to guide the basic user of the South County Nipomo area traffic forecast model on how to make some basic changes/revisions to the model.

Land-Use Revisions – can be performed within *ArcView* GIS Environment or using the *Excel* spreadsheet software depending upon the nature and extent of revisions. Simple revisions such as changing trip generation rates can be performed by modifying the trip generation pre-processor spreadsheet using *Excel*. For more extensive revisions involving changes to zonal land uses, e.g. modification to TAZ definitions, it is recommended that *ArcView* GIS software be used to update the TAZ map. If TAZ boundaries are modified or new TAZs added, the TAZ attribute for the parcels affected by the changes, may be updated using *Excel.* In such cases, updated land use summaries should be prepared using *Excel* and then imported into the trip generation pre-processor. The revised/updated land use database should be exported in DBF format for use with *TP+/Viper*.

Street Network Revisions – can be performed within the *Viper* environment or can be performed using *ArcView* and freshly imported into *Viper*. *Viper* offers capabilities to edit links, nodes, add/update link attributes etc. The user should refer to the *Viper* software user manual and/or on-line help for a complete discussion of *Viper* capabilities. The user may also desire to perform network edits using *ArcView*. *ArcView* offers capabilities to perform edits to the network shape-file and the attached link attribute file in DBF format. The user should refer to ESRI's *ArcView* Software Manual and/or on-line help for making network edits within the *ArcView* environment. The shape file-attribute file combination can be imported into *Viper* and can be used to build a fresh *TP+/Viper* network. The user should note that the *TP+/Viper* network is only a "stick figure" representation of the *ArcView* shape-file, which is accurate enough for traffic modeling purposes. Using *ArcView* is recommended if the user needs realistic overlay and plotting capabilities for the *TP+/Viper* network. If the user prefers to use *ArcView*, then a *Viper* accessory utility known as *GIS Tools*, should be procured from *Citilabs*.

Job-stream Script Revisions – can be performed using common text editors like *Notepad* or *Wordpad* or using *Viper* itself. Since the job-stream is only a simple text file written in *TP+* scripting language, the user can potentially modify it extensively to incorporate fresh modules as needed. Existing modules, command functions and parameters can also be revised as needed. The model's job-stream file currently offers the user capability to modify number and range of TAZs analyzed, trip production-attraction equations, trip distribution parameters, K-factors, external-external trips, and trip assignment functions that include link capacities and congested travel time expressions. The user should refer to the *TP+* software user manual for a complete understanding of the different command functions used in the job-stream. The user should also check with the *TP+* software user manual for syntax if any new modules, commands, or parameters are created within the job-stream file.

Other Revisions – The user can also modify/revise model accessories like the friction factor file and turn-penalty file as needed. These files are also simple text files that can be modified using common text editors like *Notepad* or *Wordpad*.

APPENDIX

ACRONYM LIST

EXISTING CONDITIONS MODEL LAND USES BY TAZ

FUTURE CONDITIONS MODEL LAND USES BY TAZ

EXISTING ROADWAY CHARACTERISTICS

Acronym List

AADT	Annual Average Daily Traffic
ADT	Average Daily Traffic
APN	Assessor's Parcel Number
ArcView	Proprietary Software
AutoCAD	Proprietary Software
CEQA	California Environmental Quality Act
CIP	Capital Improvements Program
C	Collector Roadway
DBF	Data Base Format (software)
DU	Dwelling Unit
EDU	Equivalent Dwelling Unit
FHWA	Federal Highway Administration
GIS	Geographic Information System (a database system)
HBW	Home-based Work
HBO	Home-based Other
I-X	Internal-External Trips
ITE	Institute of Transportation Engineers
KSF	1,000 Square Feet
Lo-Gen	Low Generation
LOS	Level-Of-Service
MA	Major Arterial Roadway
Med	Medical
MFDU	Multifamily Dwelling Unit
MINUPT	Traffic Planning Proprietary Software
MUTCD	Manual on Uniform Traffic Control Devices
NEPA	National Environmental Protection Act
NHB	Non-Home-Based
OVR	Over Capacity
PA	Primary Arterial Roadway
PHF	Peak Hour Factor
PHT	Peak Hour Traffic
RIF	Road Improvement Fee
RIP	Road Improvement Program
RMSE	Root Mean Square Error (Statistical Calculation)
RTA	Regional Transportation Authority (SLOCOG)
RTM	Regional Traffic Model
SAFETEA-LU	Safe Accountable Flexible Efficient Trans. Equity Act –A Legacy for Users
SCAT	South Coast Area Transit
SEIR	Supplemental Environmental Impact Report
SFDU	Single Family Dwelling Unit
SLOCOG	San Luis Obispo County Council of Governments
TAZ	Traffic Analysis Zone
TDA	Transportation Development Act
TEA-21	Transportation Efficiency Act for the 21st Century
TSM	Transportation System Management
TWSC	Two Way Stop Control
TP+/Viper	Traffic Planning Proprietary Software
X-I	External-internal trips
X-X	External-external trips

APPENDIX TABLE 1
EXISTING CONDITIONS MODEL LANDUSES BY TAZ

TAZ	Single-Family (DUs)	Multi-Family (DUs)	Mobile Homes (DUs)	Hi-generating Retail (Acres)	Low-generating Retail (Acres)	General Office (Acres)	Med Office (Acres)	Light Industrial (Acres)	Heavy Industrial (Acres)	Schools (Acres)	Govt/Public (Acres)	Churches (Acres)	Parks/ Recreational (Acres)	Agri (Acres)	Agri_S (Acres)	Misc/ Other (Acres)
101	75	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
102	4	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
103	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
104	66	0	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.1	0.0	3.8	41.3	0.0
105	21	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	650.4	0.0	0.0
106	21	0	4	0.0	0.0	0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0	181.6	2.1	2.4
107	22	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
108	31	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.4	0.0	0.0
109	82	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	87.9	0.0	0.0
110	12	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.2	0.0
111	40	0	7	8.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0	0.0	0.0
112	21	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	23.6	0.0	0.0
113	39	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
114	23	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
115	5	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.1	0.0	0.0
116	41	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
117	0	0	315	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
118	128	0	0	0.0	0.0	0.0	0.0	0.0	0.0	11.2	0.0	0.0	0.0	0.0	0.0	0.0
119	29	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.0	0.0	0.0
120	66	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
121	340	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	165.4	0.0	0.0	0.0
122	4	0	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41.6	0.0
123	5	0	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
124	12	0	9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
125	8	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
126	57	0	4	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.0	10.7	0.0	0.0	0.0	0.0
127	26	0	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
128	8	0	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
129	83	0	5	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	5.0	24.8	0.0	0.0
130	35	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.2	0.0
131	13	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
132	12	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.3	0.0
133	47	0	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	105.7	0.0	0.0
134	17	0	19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
135	22	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	163.4	0.0	0.0
136	45	0	3	0.0	0.0	0.0	0.0	22.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.7
137	75	0	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
138	74	0	2	0.0	0.0	0.0	0.0	54.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	54.2
139	0	0	0	0.0	0.0	0.0	0.0	9.7	144.4	0.0	0.0	0.0	0.0	0.0	0.0	9.7
140	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	192.2	0.0	0.0
141	0	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
201	1	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
202	4	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
203	590	46	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	200.2	0.0	0.0	0.0
204	15	2	6	0.0	0.0	0.0	0.0	13.1	9.8	0.0	0.0	0.0	0.0	0.0	21.9	13.1
205	8	2	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
206	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
207	10	1	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
208	146	7	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	54.6	0.0
209	4	0	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
210	34	1	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

APPENDIX TABLE 1
EXISTING CONDITIONS MODEL LANDUSES BY TAZ

TAZ	Single-Family (DUs)	Multi-Family (DUs)	Mobile Homes (DUs)	Hi-generating Retail (Acres)	Low-generating Retail (Acres)	General Office (Acres)	Med Office (Acres)	Light Industrial (Acres)	Heavy Industrial (Acres)	Schools (Acres)	Govt/Public (Acres)	Churches (Acres)	Parks/ Recreational (Acres)	Agri (Acres)	Agri_S (Acres)	Misc/ Other (Acres)
211	18	3	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
212	4	3	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.1	0.0
213	86	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
214	74	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
215	46	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
216	44	4	0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
217	0	0	0	0.0	15.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
218	91	0	140	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0
219	15	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3	0.0
220	48	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
221	44	1	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
222	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	10.8	0.0	0.0	43.0	0.0	0.0	0.0
223	104	1	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
224	0	0	0	4.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
225	5	0	0	7.3	0.0	2.1	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0
226	4	0	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
227	60	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
228	10	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
229	11	0	0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
230	32	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
231	126	1	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
232	103	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
233	3	2	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
234	153	1	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
235	62	9	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.0	0.0	0.0	0.0
236	16	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
237	105	4	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
238	37	9	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.4	0.0
239	217	29	0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240	179	3	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
241	39	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41.1	0.0	0.0
242	32	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
243	82	4	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
244	41	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
245	29	2	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
246	118	0	60	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
247	13	9	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
248	146	2	7	0.0	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
249	109	2	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
250	86	3	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
251	32	1	298	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.0	0.0	0.0	0.0
252	129	2	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
253	0	5	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
254	43	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
255	74	3	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
256	63	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
257	115	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
258	19	5	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	58.4	0.0	0.0	14.6	74.3	0.0
259	10	3	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
260	1	0	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0	0.0	154.0	0.0	0.0
261	13	4	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	18.6	221.6	0.0	0.0

APPENDIX TABLE 1
EXISTING CONDITIONS MODEL LANDUSES BY TAZ

TAZ	Single-Family (DUs)	Multi-Family (DUs)	Mobile Homes (DUs)	Hi-generating Retail (Acres)	Low-generating Retail (Acres)	General Office (Acres)	Med Office (Acres)	Light Industrial (Acres)	Heavy Industrial (Acres)	Schools (Acres)	Govt/Public (Acres)	Churches (Acres)	Parks/ Recreational (Acres)	Agri (Acres)	Agri_S (Acres)	Misc/ Other (Acres)
262	3	0	0	0.0	5.7	0.0	0.0	1.3	2.9	0.0	0.0	0.0	0.0	0.0	0.0	1.3
263	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	56.4	0.0	0.0
264	4	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
265	10	3	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.5	0.0
266	0	2	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
267	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	96.2	0.0
268	14	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
269	3	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	40.2	108.6	0.0
270	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	74.4	0.0	0.0
271	14	0	0	1.8	1.1	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.0
301	13	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
302	54	0	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	540.0	0.0	0.0
303	3	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.0	0.0	0.0
304	25	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
305	9	0	1	0.0	5.9	0.0	0.0	0.0	0.0	0.0	0.0	5.7	0.0	0.0	0.0	0.0
306	9	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	419.6	34.3	0.0
307	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	131.1	8.7	0.0
401	6	2	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	218.2	0.0	0.0
402	10	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	142.2	0.0	0.0
403	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
404	3	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.3	0.0	0.0
405	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
406	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	77.8	0.0	0.0	0.0	0.0	0.0	0.0
407	15	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
408	10	1	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	59.1	0.0	0.0
409	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	141.1	0.0	0.0
410	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
411	46	5	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
412	47	17	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
413	68	23	0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
414	114	5	0	0.2	1.7	0.3	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0
415	180	0	0	0.0	0.0	0.0	0.0	0.0	0.0	7.5	0.0	0.0	0.0	0.0	0.0	0.0
416	1	0	0	0.0	4.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.7	24.5	0.0	0.0
417	18	0	0	0.3	0.1	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
418	38	21	0	1.0	1.6	0.4	0.1	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
419	3	0	0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0
420	43	2	0	1.0	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
421	33	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
422	55	2	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.4	0.0	41.6	0.0	0.0
423	3	0	0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
424	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
425	41	2	131	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
426	25	1	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
427	15	9	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
428	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
429	3	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	49.3	0.0
Total	6253	269	1098	28	51	3	4	104	161	107	66	59	449	3,947	661	104

APPENDIX TABLE 2
BUILD-OUT CONDITIONS MODEL LAND USES BY TAZ

TAZ	Single-Family (DUs)	Multi-Family (DUs)	Mobile Homes (DUs)	Hi-generating Retail (Acres)	Low-generating Retail (Acres)	General Office (Acres)	Med Office (Acres)	Light Industrial (Acres)	Heavy Industrial (Acres)	Schools (Acres)	Govt/Public (Acres)	Churches (Acres)	Parks/ Recreational (Acres)	Agri (Acres)	Agri_S (Acres)	Misc/ Other (Acres)
101	101	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
102	7	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
103	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
104	126	0	7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.1	0.0	3.8	149.5	1.8
105	28	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	765.0	0.0	0.0
106	37	0	4	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	211.4	0.0	0.0
107	24	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
108	33	0	1	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.4	0.0	0.0
109	147	0	1	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	87.9	0.0	0.0
110	17	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.8	0.0
111	62	0	8	8.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	30.0	0.0	0.0
112	24	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	22.1	0.0	0.0
113	53	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
114	30	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
115	5	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.4	0.0	0.0
116	54	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
117	0	0	330	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
118	128	0	0	0.0	0.7	0.0	0.0	0.0	0.0	11.2	0.0	0.0	0.0	0.0	0.0	0.0
119	69	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.0	0.0	0.0
120	84	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
121	440	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	165.4	0.0	0.0	2.0
122	35	0	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	177.3	0.0
123	8	0	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
124	16	0	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
125	13	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
126	74	0	4	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.0	10.7	0.0	26.7	0.0	0.0
127	32	0	7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
128	41	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.8	0.0	0.0	0.0	0.0	0.0
129	128	0	6	0.0	0.0	0.0	2.0	0.0	0.0	0.0	18.6	0.0	5.0	24.8	0.0	0.0
130	119	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
131	68	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
132	18	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	143.7	0.0
133	66	0	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	146.4	46.5	0.0
134	24	0	19	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
135	24	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	163.5	0.0	0.0
136	162	0	1	0.0	0.0	0.0	0.0	19.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
137	216	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
138	98	0	1	0.0	0.0	0.0	0.0	46.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.3
139	0	0	0	0.0	0.0	0.0	0.0	41.7	144.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	192.2	0.0	0.0
141	5	0	1	0.00	0.00	27.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
142	2	0	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
143	3	0	0	0.00	0.00	0.00	0.00	0.00	0.00	5.50	0.00	0.00	6.60	0.00	0.00	0.00
144	488	70	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
145	24	3	7	13.70	0.00	3.20	0.00	0.00	0.00	0.00	0.00	0.00	326.37	0.00	0.00	2034.00
146	16	3	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147	62	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
201	2	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.3	0.0	0.0
202	4	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	203.0	0.0
203	590	60	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	200.2	0.0	0.0	0.0
204	28	3	6	0.0	0.0	0.0	0.0	13.1	9.8	0.0	0.0	0.0	0.0	0.0	21.9	0.0

APPENDIX TABLE 2
BUILD-OUT CONDITIONS MODEL LAND USES BY TAZ

TAZ	Single-Family (DUs)	Multi-Family (DUs)	Mobile Homes (DUs)	Hi-generating Retail (Acres)	Low-generating Retail (Acres)	General Office (Acres)	Med Office (Acres)	Light Industrial (Acres)	Heavy Industrial (Acres)	Schools (Acres)	Govt/Public (Acres)	Churches (Acres)	Parks/ Recreational (Acres)	Agri (Acres)	Agri_S (Acres)	Misc/ Other (Acres)
205	19	3	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.0	0.0
206	39	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
207	26	2	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
208	315	9	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	174.6	0.0
209	9	0	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
210	53	2	0	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
211	21	4	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
212	8	4	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.1	0.0
213	91	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
214	112	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
215	50	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
216	47	5	0	0.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
217	0	0	0	0.0	15.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
218	91	0	149	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0
219	20	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3	0.0
220	82	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
221	65	2	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
222	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	10.8	0.0	0.0	43.0	0.0	0.0	0.0
223	230	2	1	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
224	0	0	0	37.1	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
225	5	0	0	54.9	3.2	2.1	0.0	0.0	0.0	0.0	0.0	0.0	5.0	0.0	0.0	1.9
226	5	0	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	0.0
227	88	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
228	31	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
229	15	0	0	0.0	0.0	0.0	4.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
230	42	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
231	207	1	0	0.0	2.8	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0
232	122	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
233	2	313	1	0.0	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
234	163	2	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5
235	149	11	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.1	0.0	0.0	0.0	0.0
236	18	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
237	138	21	0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
238	37	104	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.4	0.0
239	217	71	0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
240	179	45	0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
241	55	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	63.3	225.0	0.0
242	79	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
243	105	5	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
244	46	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
245	54	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
246	118	23	64	21.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
247	32	11	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
248	216	0	5	0.0	4.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
249	130	3	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
250	92	4	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
251	48	2	316	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.0	0.0	0.0	2.1
252	168	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
253	139	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
254	47	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
255	76	3	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

APPENDIX TABLE 2
BUILD-OUT CONDITIONS MODEL LAND USES BY TAZ

TAZ	Single-Family (DUs)	Multi-Family (DUs)	Mobile Homes (DUs)	Hi-generating Retail (Acres)	Low-generating Retail (Acres)	General Office (Acres)	Med Office (Acres)	Light Industrial (Acres)	Heavy Industrial (Acres)	Schools (Acres)	Govt/Public (Acres)	Churches (Acres)	Parks/ Recreational (Acres)	Agri (Acres)	Agri_S (Acres)	Misc/ Other (Acres)
256	80	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
257	117	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
258	24	7	0	0.0	0.0	0	0.0	0.0	0.0	0.0	69.4	0.0	0.0	15	74.3	0.0
259	13	4	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
260	1	0	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0	0.0	154	0.0	41.9
261	13	5	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	19	221.6	0.0	0.0
262	4	0	0	0.0	5.7	0.0	0.0	1.5	2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
263	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	56	0	0.0
264	8	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	0.0
265	11	4	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.6	0.0
266	0	3	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.3	0.0
267	4	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	96.2	0
268	19	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
269	23	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.2	108.6	0.0
270	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	74	0.0	0.0
271	135	0	0	13.9	5.1	1.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.0
301	53	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
302	89	0	7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	745.5	0.0	0.0
303	18	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.0	0.0	0.0
304	62	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
305	13	0	1	0.0	5.9	0.0	0.0	0.0	0.0	0.0	0.0	5.7	0.0	0.0	0.0	0.0
306	10	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	419.6	64.7	0.0
307	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	131.2	20.3	0.0
401	9	3	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	718	0.0	0.0
402	11	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	142	0.0	0.0
403	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
404	5	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91	0.0	0.0
405	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	546.0	0.0	0.0
406	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	78	0.0	0.0	0.0	0.0	0.0	0.0
407	193	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
408	14	2	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	59	0.0	0.0
409	398	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.6	0.0	0.0
410	5	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
411	53	7	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
412	52	22	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
413	71	36	0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
414	114	12	0	1.6	2	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.0	0.0	0.0	0.0
415	180	0	0	0.0	0.0	0.0	0.0	0.0	0.0	8	0.0	0.0	0.0	0.0	0.0	0.0
416	1	0	0	0.0	4	0.0	0.3	0.0	0.0	0.0	0.2	0.0	0.7	24	0.0	0.0
417	26	0	0	2.1	1.7	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
418	38	37	0	7.5	2.3	5.2	0.3	0.0	0.0	0.0	0.2	0.3	0.0	0.0	0.0	0.7
419	23	0	0	0.0	6.7	0.0	0.0	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0
420	43	3	0	7.4	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
421	39	50	0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
422	55	3	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.4	0.0	41.6	0.0	0.2
423	8	0	0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.0	11.3	0.0	0.0
424	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
425	41	51	139	1.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
426	201	1	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
427	76	12	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
428	72	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

APPENDIX TABLE 2
BUILD-OUT CONDITIONS MODEL LAND USES BY TAZ

TAZ	Single-Family (DUs)	Multi-Family (DUs)	Mobile Homes (DUs)	Hi-generating Retail (Acres)	Low-generating Retail (Acres)	General Office (Acres)	Med Office (Acres)	Light Industrial (Acres)	Heavy Industrial (Acres)	Schools (Acres)	Govt/Public (Acres)	Churches (Acres)	Parks/ Recreational (Acres)	Agri (Acres)	Agri_S (Acres)	Misc/ Other (Acres)
429	4	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	91.0	0.0	49.3	0.0
Total	10374	1051	1159	169	89	42	8	122	161	113	104	59	872	5,306	1,711	2,097

APPENDIX TABLE 3
ROADWAY SEGMENT CHARACTERISTICS

Roadway Segment	Facility Type	Roadway Classif.[1]	Total Width (ft)	Avg Shoulder Width (ft)	Total Lanes	Lane Width (ft)	Veh/lane/hour[2]	Speed (mph)
Tefft Street Corridor								
Tefft Street (north of Las Flores Drive)	Two-lane Collector	C	34	5	2	12		35
Tefft Street (south of Tejas Place)	Three-lane Arterial	MA	46	5	3	12	1065	45
Tefft Street (west of Mary Avenue)	Five-lane Arterial	PA	76	8	5	12	1350	45
Tefft Street (east of Oakglen Avenue)	Two-lane Collector	C	34	5	2	12	1006	35
Tefft Street (west of Thompson Avenue)	Two-lane Collector	C	34	5	2	12	1006	35
Los Berros Road Corridor								
Los Berros Road (east of Valley Road)	Two-lane Collector	C	32	4	2	12	1334	35
Los Berros Road (east of Stanton Road)	Two-lane Collector	C	24	0	2	12		45
Los Berros Road (west of US 101)	Two-lane Arterial	MA	30	3	2	12		45
Thompson Street Corridor								
Thompson Street (south of US 101)	Two-lane Arterial	MA	32	4	2	12	1411	55
Thompson Street (north of Tefft Street)	Two-lane Arterial	MA	55	9	**3**	12	1357	45
Thompson Street (north of SR 166)	Two-lane Collector	C	28	2	2	12	1221	55
Pomeroy Road Corridor								
Pomeroy Road (south of Los Berros Road)	Two-Lane Collector	C	21	0	2	11	656	45
Pomeroy Road (north of Willow Road)	Two-Lane Collector	C	21	0	2	11	656	45
Pomeroy Road (north of Tefft Street)	Two-Lane Collector	MA	30	3	2	12		35
El Campo Road Corridor								
El Campo Road (south of Halcyon Road)	Two-Lane Collector	C	40	8	2	12	1522	40
El Campo Road (north of Halcyon Road)	Two-Lane Collector	C	22	0	2	11	729	40
El Campo Road (south of US 101)	Two-Lane Collector	L	24	0	2	12		30
Halcyon Road Corridor								
Halcyon Road (north of Cienaga Road/Highway 1)	Two-lane Collector	C	25	4	2	12	998	45
Halcyon Road (south of Cienaga Road)	Two-lane Collector	C	25	0	2	12	998	45
Halcyon Road (west of El Campo Road)	Two-lane Collector	C	42	2	2	12	737	40
Halcyon Road (east of Aloma Way)	Two-lane Arterial	C	32	4	2	12	1261	45
Other facilties								
Division Street (west of Orchard Avenue)	Two-lane Arterial	MA	26	1	2	12		40
Hetrick Avenue (south of Summit Station Road)	Two-lane Collector	C	20	0	2	10	795	45
Mary Avenue (north of Tefft Street)	Two-lane Arterial	MA	42	9	2	12	1271	45
Mesa Road (west of Tefft Street)	Two-lane Collector	C	29	3	2	12	1193	35
Orchard Street (south of Tefft Street)	Two-lane Collector	C	34	5	2	12	1412	45
Orchard Street (south of Southland Street)	Two-lane Collector	C	26	1	2	12		55
Summit Station Road (south of Los Berros Road)	Two-lane Collector	C	28	2	2	12	664	35
South Frontage Road (south of Tefft Street)	Two-lane Collector	C	28	2	2	12		35
Willow Road (east of Highway 1)	Two-lane Arterial	MA	40	6	2	12	1497	50
Willow Road (west of Pomeroy Road)	Two-lane Arterial	PA	40	6	2	12	1497	50

Note

1. C - Collector, MA - Major Arterial, PA - Primary Arterial

2. 10% peak daily factor derived from overall average in peak hour volumes when compared to daily volumes from 2004 counts.